Aquatic Ecology and Wetlands Assessment

SR Ripley II Solar

Lauderdale County, Tennessee

March 22, 2024

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Acronyms and Abbreviations

AOI	Area of Interest
ARAP	Aquatic Resource Alteration Permit
CWA	Clean Water Act
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
HD	Hydrological Determination
HDR	HDR Engineering, Inc.
HUC	Hydrologic Unit Code
JD	Jurisdictional Determination
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NWI	National Wetland Inventory
NWP	Nationwide Permit
OHWM	Ordinary High-Water Mark
PEM	Palustrine Emergent Wetland
PFO	Forested Wetland
PUBHh	Palustrine Unconsolidated Bottom, Permanently Flooded, Diked/Impounded
Project	SR Ripley II solar site
Project Site	SR Ripley II Project Site
PSS	Shrub/Scrub Wetland
SRC	Silicon Ranch Corporation
TDEC	Tennessee Department of Environment & Conservation
TN-QHP	Tennessee Qualified Hydrologic Professional
TN-QHP-IT	Tennessee Qualified Hydrologic Professional in Training
TRAM	Tennessee Rapid Assessment Method
TVA	Tennessee Valley Authority
USACE	U.S. Army Corps of Engineers
USDA NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WOTUS	Waters of the U.S.
WWC	Wet Weather Conveyance

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1 Introduction and Scope of Work

On behalf of Silicon Ranch Corporation (SRC), HDR Engineering, Inc (HDR) conducted a wetlands and waters delineation for the proposed SR Ripley II solar site (Project) located on approximately 490 acres in Lauderdale County, Tennessee (Project Site).

Wetlands are protected under Section 404 and 401 of the Clean Water Act (CWA) and by Executive Order 11990. The goal of the wetlands field delineation is to identify surface water and wetland resources within the Project Site likely to be considered jurisdictional by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. The CWA defines jurisdictional waters to include navigable waters, intermittent and ephemeral tributaries of truly navigable waters, and adjacent wetlands. The 1987 USACE Wetland Delineation Manual defines wetlands as areas that have positive indicators for hydrophytic vegetation, wetland hydrology, and hydric soils or as “areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions,” with special exceptions.

In accordance with TVA’s *Guidelines for Conducting Biological and Cultural Surveys and Impact Analyses* (TVA 2023), which are intended to prescribe the content of wetland reports for use in analysis and preparation of National Environmental Policy Act (NEPA) documents, HDR conducted field surveys to identify wetland resources on the Project Site, determine impacts, and recommend suitable mitigation measures. The results of this assessment are presented herein. Supporting figures and maps are provided in **Appendix A**, wetland and stream data forms are provided in **Appendix B**, weather conditions are provided in **Appendix C**, site photos are provided in **Appendix D**, and the soil report is provided in **Appendix E**.

1.1 Project Site

The Project is proposed to be located approximately 2 miles southeast of the city of Ripley on a Project Site of approximately 490 acres in extent in Lauderdale County, Tennessee (**Appendix A, Figure 1**). The approximate center coordinates for the Project Site are latitude 35.723829°, longitude -89.517959°. Hyde Creek runs along the southern border of the Project Site, flowing towards the northwest. Two transmission lines, one in the central portion of the site and one in the northwest, transect the Project Site from northeast to southwest. Highway 19, running east to west, bisects the Project Site (see **Appendix A, Figure 2**).

1.1.1 Geology, Topography, and Land Use

Based on a review of Google Earth Imagery, historic land use within the Project Site has been undeveloped agricultural property since approximately 1947, consisting mostly of active agriculture fields of cotton, corn, and soybeans. The surrounding properties consist of agricultural fields, residential properties, a retail petroleum facility, and a natural gas metering station. The Project Site is in the Coastal Plain Physiographic Province of Tennessee, which is characterized by low rolling hills and wide stream valleys. The landscape generally slopes towards the south/southwest direction leading to Hyde Creek and its tributaries. The terrain is moderately flat with elevations ranging from 350 feet in the south-central region of the Project

Site to approximately 460 feet in the north portion (**Appendix A, Figure 3**). The Project Site is located within the Upper Cane Creek Watershed (Hydrologic Unit Code [HUC] 10: 0801020807) (**Appendix A, Figure 6)**.

1.1.2 Soils

Soils depicted within the Project Site by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) soils map of Lauderdale County were identified as prime farmland, prime farmland if drained, and not prime farmland. Approximately 42 percent of the Project Site is classified as prime farmland, with approximately one percent being classified as prime farmland if drained (**Appendix A, Figure 4**). There are 15 different NRCS soil series present on site; however, only approximately 2 percent of the soils found throughout the Site are hydric or have hydric inclusions. These soils are Center silt loam, 0 to 3 percent slopes (Ce) and Convent silt loam, occasionally flooded (Ct), both of which are listed as hydric on the USDA Hydric Soils List. These soils are not associated with areas mapped in the National Wetland Inventory (NWI) and National Hydrography Dataset (NHD) data or floodplain areas of Hyde Creek (**Appendix A, Figure 4**). The full USDA NRCS Soil Report can be found in **Appendix E**.

Table 1. Summary of USDA NRCS Soils within the Project Site

Map Unit Symbol	Map Unit Name	Farmland Classification	Hydric	Acres of AOI	Percent of AOI
Ad	Adler silt loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	Non-hydric	133.0	32.53%
Ce	Center silt loam, 0 to 3 percent slopes	All areas are prime farmland	Hydric	2.4	0.58%
Ct	Convent silt loam, occasionally flooded	Prime farmland if drained	Hydric	5.6	1.38%
GrC3	Grenada silt loam, 5 to 8 percent slopes, severely eroded	Not prime farmland	Non-hydric	6.1	1.48%
LoB2	Loring silt loam, 2 to 5 percent slopes, moderately eroded	All areas are prime farmland	Non-hydric	4.0	0.98%
LoB3	Loring silt loam, 2 to 5 percent slopes, severely eroded	Not prime farmland	Non-hydric	31.8	7.78%
LoC2	Loring silt loam, 5 to 8 percent slopes, eroded	Not prime farmland	Non-hydric	7.6	1.85%
LoC3	Loring silt loam, 5 to 8 percent slopes, severely eroded	Not prime farmland	Non-hydric	25.5	6.23%
LoD3	Loring silt loam, 8 to 12 percent slopes, severely eroded	Not prime farmland	Non-hydric	10.9	2.68%
MeB2	Memphis silt loam, 2 to 5 percent slopes, moderately eroded, northern phase	All areas are prime farmland	Non-hydric	12.4	3.03%
MeC2	Memphis silt loam, 5 to 8 percent slopes,	Not prime farmland	Non-hydric	112.5	27.49%

Map Unit Symbol	Map Unit Name	Farmland Classification	Hydric	Acres of AOI	Percent of AOI
	moderately eroded, northern phase				
MeD3	Memphis silt loam, 8 to 12 percent slopes, severely eroded, northern phase	Not prime farmland	Non-hydric	27.2	6.66%
MeE3	Memphis silt loam, 12 to 20 percent slopes, severely eroded, northern phase	Not prime farmland	Predominately non-hydric	99.4	24.31%
MeF	Memphis silt loam, 20 to 40 percent slopes, northern phase	Not prime farmland	Non-hydric	6.5	1.58%
Mo	Morganfield silt loam, occasionally flooded	All areas are prime farmland	Non-hydric	4.8	1.19%

1.1.3 Floodplain

Based on Lauderdale County Flood Insurance Rate Map Panels 47097C0357D and 47097C0359D, the areas immediately adjacent to Hyde Creek consist of 51.88 acres of Federal Emergency Management Agency (FEMA) 100-year Floodplain, of which 7.3 acres are considered to be an active floodway (**Appendix A, Figure 5**). The 100-year Floodplain is defined as areas subject to inundation by the 1-percent-annual-chance flood event.

1.1.4 Vegetation

The Project Site is located within the Mississippi Valley Loess Plains Ecoregion of Tennessee (Level III; EPA 2013). Typical vegetation within this ecoregion includes oak-hickory forests and southern bottomland hardwood forests. This region is also characterized by having areas of cultivated cropland typically of corn, soybeans, cotton, and grain sorghum.

Based on site visits conducted on September 19-23, 2022, and November 1, 2023, vegetation within the Project Site consisted primarily of cultivated soybean, corn, and cotton fields with stands of mixed deciduous forests and herbaceous wetlands. Vegetation with the delineated wetlands consisted primarily of sweetgum (*Liquidambar styraciflua*), black willow (*Salix nigra*), and American sycamore *(Platanus occidentalis).* Vegetation within the emergent wetlands consisted primarily of proso millet (*Panicum miliaceum*). Vegetation within the surrounding uplands consisted of soybean fields, (*Glycine max*), corn fields (*Zea mays*), and cotton fields (*Gossypium hirsutum*).

2 Preliminary Wetland Review

2.1 Desktop Review

Prior to conducting field investigations, HDR environmental scientists reviewed available background information including:

- Aerial imagery via ESRI and Google Earth software (**Appendix A, Figure 2**),
- United States Geological Survey (USGS) 7.5-minute quadrangle map (**Appendix A, Figure 3**),
- USDA NRCS Web Soil Survey (**Appendix A, Figure 4**),
- USGS NHD mapped streams (**Appendix A, Figure 5**),
- U.S. Fish and Wildlife Service (USFWS) NWI mapped wetlands (**Appendix A, Figure 5**), and
- FEMA floodplains (**Appendix A, Figure 5**).
- Hydrologic Unit Code (HUC) 10 Cane Creek Upper Watershed Map (**Appendix A, Figure 6**).

According to the NWI, there are 3.0 acres of ponds (palustrine unconsolidated bottom, permanently flooded, diked/impounded [PUBHh]) and 0.9 acre of palustrine emergent wetlands (PEM) on the Project Site. The NHD depicted 17,639 feet of stream and tributaries located on site, including Hyde Creek, which is located along the southern property boundary. The USGS topographic quadrangles of Ripley South, TN (1983) and Durhamville, TN (1981) depicts the ponds and tributaries indicated in the NWI and NHD datasets. Aerial imagery does not correspond to the NWI findings. The 3.0 acres of ponds shown in the NWI are associated with nine separate ponds. Only one of these ponds is visible in the aerial imagery with the remaining eight NWI PUBHh features appearing to be actively maintained agricultural fields.

The Project Site was reviewed for the presence of Exceptional Tennessee Waters and impaired waters. No Exceptional Tennessee Waters were found on the Project Site; however, on-site Hyde Creek is listed as an impaired water on Tennessee's Division of Water Resources Water Quality Assessment and Permits Data Mapper for channelization; sedimentation and siltation due to crop production and urban activity; and the bacterial presence of *Escherichia coli* due to grazing and sewer overflows.

2.2 Qualifications

Qualified scientists conducted all wetlands surveys. Surveys were carried out by Benjamin Burdette (Tennessee Qualified Hydrologic Professional [TN-QHP]), Ivan Madonado (TN-QHP), Lyranda Thiem (Tennessee Qualified Hydrologic Professional in Training [TN-QHP-IT]), and Jake Irvin (Professional Wetland Scientist [PWS]). These scientists have advanced degrees, training, and experience in accurate identification and assessment of wetland and upland vegetation species, soil profile and morphology, and hydrologic indicators influencing wetland occurrence. HDR staff also have experience in federal, state, and local wetland regulatory compliance obligations and NEPA processes, as well as mitigation measures.

3 Waters and Wetlands Determination Methods

3.1 Regulatory Guidance

On August 29, 2023, the U.S. Environmental Protection Agency (EPA) and the USACE issued a final rule to amend the final "Revised Definition of 'Waters of the United States'" rule, that became effective January 18, 2023. The August 2023 final amended rule conforms the definition of "Waters of the United States" to the Supreme Court's May 25, 2023, decision in the Sackett v. *EPA* case, altering previous definitions of WOTUS. However, since parts of the January 2023 Rule are invalid under the Supreme Court's interpretation of the CWA in the May 2023 *Sackett* ruling, the EPA and USACE revised the regulatory text to make it consistent with the Sackett ruling; thus, the "Revised Definition of 'Waters of the United States'; Conforming" became effective September 8, 2023. Currently, the January 2023 Rule as Amended (final conforming rule) is prohibited from being used in Tennessee, including 26 other states; therefore, EPA/USACE is interpreting WOTUS definitions consistent with the pre-2015 regulatory regime and the ruling in the *Sackett v. EPA* case for the states enjoined from the January 2023 Rule as Amended.

The prior definitions and regulatory guidance to identify WOTUS in Tennessee included significant nexus evaluations for adjacent wetlands, as described in the USACE 2008 Rapanos Guidance (e.g., pre-2015 regulatory regime). The Supreme Court ruling in *Sackett v. EPA* effectively nullifies the use of the Rapanos significant-nexus evaluation in jurisdictional determinations. Guidance has not yet been issued to aid in determining the limits of federal jurisdiction for some aquatic resources under *Sackett*, such as seasonally flowing tributaries and how to define which wetlands have a sufficient "continuous surface connection" to be considered adjoining and "indistinguishable" to other WOTUS.

Since agency jurisdictional determination guidance in response to *Sackett v. EPA* has not been issued to date, the potential for federal jurisdiction was evaluated based on the pre-2015 regulatory regime as well as the current understanding of the *Sackett v. EPA* ruling (e.g., identifying relatively permanent waters that are indistinguishable from other relatively permanent waters).

3.2 Field Methods

Following a background study and desktop review, a field survey was conducted within the Project Site by HDR environmental staff conducted on September 19-23, 2022, and November 1, 2023. HDR used the pedestrian survey method to survey the 490-acre survey area for potential jurisdictional features and examine potential jurisdictional Waters of the U.S. (WOTUS) including wetlands. According to the EPA Antecedent Precipitation Tool, though weather conditions were generally wetter than normal during the field survey, the Project Site was in incipient drought (**Appendix C**).

Potential waters and wetlands were delineated according to the methodology and guidance described in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual and the USACE *Atlantic and Gulf Coastal Plain Region (Version 2.0*) (Regional Supplement)

(USACE 2012). Wetland features were classified according to the Cowardian naming convention (Cowardin et al. 1979). Streams were determined utilizing the methodology and guidance provided in *Regulatory Guidance Letter 05-05 – Ordinary High-Water Mark (OHWM) Identification* (USACE 2005) and, per TVA guidance for project sites in the TVA power service area, the Tennessee Department of Environment and Conservation (TDEC) Division of Water Resources *Guidance for Making Hydrologic Determinations (Version 1.5)* (TDEC 2020).

When applying Tennessee Rapid Assessment Method (TRAM) methodology, wetlands are scored into three categories of wetland function, condition, and quality: low (scores 0-29), good/moderate (30-59), and superior (60-100). When applying Hydrologic Determination (HD) methodology, watercourses are scored based on primary and secondary field indicators. Primary indicators are individual or combinations of field characteristics that, under normal circumstances and in the absence of any directly contradictory evidence, are considered to be definitive for jurisdictional purposes. Secondary indicators are evaluated if none of the primary indicators are present at the time of survey.

Potential jurisdictional WOTUS were flagged in the field and ESRI Field Maps was employed to map WOTUS boundaries via a mobile device. The mobile device's integrated GPS receiver was used to collect wetland data in the field with sub-meter accuracy. Geographic Information System (GIS) software was used to analyze collected features, calculate areas, and generate figures. All point, line, and polygon data collected using the GPS receiver and displayed on subsequent figures are for review purposes only and do not represent a professional civil survey.

The USACE has the regulatory authority to issue preliminary and/or approved jurisdictional determinations based on the regulations in place at the time of their assessment. Therefore, the potential jurisdictional status of features identified in this delineation and proposed jurisdictional determination reflect that of the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett v. Environmental Protection Agency* (EPA) in effect at the time of this report.

The WOTUS determinations within this report are subject to review and approval by the USACE Memphis District, and the final WOTUS determination is within the regulatory authority of both USACE and EPA.

4 Waters and Wetlands Descriptions

4.1 Streams

During the site visit, 18 jurisdictional streams were identified (**Table 2**). These included one named perennial stream (Hyde Creek) and 17 unnamed intermittent tributaries to Hyde Creek. All streams identified would be regulated by the USACE under Section 404 and by TDEC under Section 401 of the CWA.

4.1.1 Relatively Permanent Waters with Perennial Flow

Stream S001 was identified as Relatively Permanent Waters (RPWs) that exhibit perennial surface water flow. S001 is identified as Hyde Creek (**Appendix A, Figure 7.5 and Figure 7.6**).

According to the Cowardian Classification hierarchical structure (Cowardian et al. 1979), S001 is classified as a riverine, lower perennial feature (R2). Ordinary high-water mark (OHWM) indicators observed during the field assessment include a well-defined natural line impressed on the bank, shelving, absence of vegetation, disturbed and/or washed away leaf litter, sediment deposition, sediment sorting, and scour.

Stream S001 (Hyde Creek) is the only named stream located in the Project Site (Hyde Creek) and is 2,525 linear feet in extent. Hyde Creek shows evidence of having been straightened and deepened in the past based on spoil piles directly adjacent to the streambanks. Because of this alteration and other impacts from agricultural activities in the area, S001 is not expected to provide high-quality habitat for aquatic species. The banks are forested with various hardwood species for the entire length in the Project Site.

4.1.2 Relatively Permanent Waters with Seasonal Flow

Streams S002 through S018 were identified as RPWs that exhibit continuous seasonal surface flow to other RPWs on and off-site, all of which appear to drain to Hyde Creek **(Appendix A, Figure 7.1 - Figure 7.6)**. According to the Cowardin Classification hierarchical structure (Cowardin et al. 1979), these streams are classified as riverine, intermittent features (R4). OHWM indicators observed during the field assessment include a well-defined natural line impressed on the bank, disturbed or washed away leaf litter, absence of vegetation, sediment deposition, and scour.

There are 19,932 linear feet of intermittent streams (R4). Most of the intermittent streams are in the open and show indication that they have been straightened for drainage or irrigation purposes traversing the agricultural fields. The majority of intermittent streams that are not transecting the agricultural fields have been straightened and follow property lines. All of the streams on the Project Site have been impacted by sedimentation and physical alteration as a result of agricultural activities. As a result, they provide poor quality habitat for aquatic species.

S002 through S018 are briefly described below. All features are shown on **Figure 7.1 - Figure 7.6** of **Appendix A**.

S002 is an intermittent stream found on the southwestern side of the Project Site. S002 flows south to Hyde Creek and off-site.

S003 and S004 are intermittent streams found in the southeastern corner of the Project Site and flow south into Hyde Creek and drains off-site.

S005 and S006 are an intermittent stream that runs across the southern side (S005) and the eastern side (S006) of the Project Site, is interrupted by the Project boundary, and flows south into Hyde Creek and drains off-site. S005 connects to S006 through a culvert offsite.

S007 is an intermittent stream that runs on the eastern side of the Project Site, connects to S006, and drains off-site.

S008 is an intermittent stream that runs on the western side of the Project Site and flows south off-site.

S009 is an intermittent stream found in the center of the Project Site and flows into W008 and P001.

S010 is an intermittent stream on the western side of the Project Site and flows from a culvert in P001 and south into W008. From there, it flows off-site.

S011 is an intermittent stream on the northern boundary south of Highway 19 and flows north off-site.

S012 and S016 are an intermittent stream that runs across the northern boundary south of Highway 19 (S012) and across the southern boundary north of Highway 19 (S016). The streams are connected via a culvert located offsite underneath Highway 19. S016 connects to S015 and flows off-site.

S013 is an intermittent stream on the western side of the parcel north of Highway 19. S013 flows through the northern parcel and off-site. S014 connects to S013 and flows north off-site.

S015 is an intermittent stream on the south side of parcel north of Highway 19. S015 flows east off-site.

S017 is an intermittent stream on the east side of the northern parcel north of Highway 19 and flows east off-site.

S018 is an intermittent stream on the east side of the northern parcel north of Highway 19 and flows east off-site.

Table 2. Summary of Streams within the Project Site

Feature Identifier	Flow Regime	Cowardian Classification[1]	TDEC HD Determination (Score)	TVA Streamside Management Category	Midpoint Coordinates		Presumed Jurisdiction		Average OHWM[2] (ft)	Linear Feet within Project Site
					Latitude	Longitude	Section 404	Section 401		
S001	Perennial	R5UB	Stream [24]	Standard	35.711322	-89.524010	Yes	Yes	12	819
S002	Intermittent	R4SB5	Stream [21.5]	Standard	35.715422	-89.519524	Yes	Yes	4	4,083
S003	Intermittent	R4SB5	Stream [16]	Standard	35.708672	-89.515496	Yes	Yes	8	473
S004	Intermittent	R4SB5	Stream [15]	Standard	35.709985	-89.517876	Yes	Yes	5	1,565
S005	Intermittent	R4SB5	Stream [20]	Standard	35.711740	-89.519376	Yes	Yes	5	2,779
S006	Intermittent	R4SB5	Stream [23]	Standard	35.715528	-89.512725	Yes	Yes	6	1,748
S007	Intermittent	R4SB5	Stream [19.5]	Standard	35.716158	-89.511653	Yes	Yes	6	701
S008	Intermittent	R4SB5	Stream [19.25]	Standard	35.717919	-89.522032	Yes	Yes	4	1,105
S009	Intermittent	R4SB5	Stream [19]	Standard	35.720356	-89.517988	Yes	Yes	5	488
S010	Intermittent	R4SB5	Stream [21]	Standard	35.718891	-89.522130	Yes	Yes	6	1,565
S011	Intermittent	R4SB5	Stream [19.5]	Standard	35.724442	-89.518678	Yes	Yes	4	356
S012	Intermittent	R4SB5	Stream [20]	Standard	35.724384	-89.516055	Yes	Yes	4	218
S013	Intermittent	R4SB5	Stream [20]	Standard	35.727325	-89.522208	Yes	Yes	4	2,147
S014	Intermittent	R4SB5	Stream [22.5]	Standard	35.728916	-89.521473	Yes	Yes	3	340
S015	Intermittent	R4SB5	Stream [19]	Standard	35.726227	-89.519601	Yes	Yes	5	1,204
S016	Intermittent	R4SB5	Stream [23.5]	Standard	35.725510	-89.518098	Yes	Yes	3	944
S017	Intermittent	R4SB3	Stream [23]	Standard	35.727963	-89.517540	Yes	Yes	18	98
S018	Intermittent	R4SB5	Stream [21.5]	Standard	35.728543	-89.517259	Yes	Yes	6	118
Streams Total:										**20,751**

1. R4SB3: Riverine Intermittent, Cobble-Gravel Streambed
R4SB5: Riverine Intermittent, Mud Streambed
R5UB: Riverine Unknown Perennial, Unconsolidated Bottom
2. OHWM: Width of stream at ordinary high-water mark

4.2 Wetlands

Twelve wetlands were identified during the site visit comprising a total of 4.06 acres (**Table 3**). Of these, there were seven emergent wetlands (PEM), three forested wetlands (PFO), one wetland split between PFO and shrub/scrub wetland (PSS), and one wetland split between PFO and PEM. Three of the wetlands, W007-W009, were associated with relatively permanent waters and are presumed to be jurisdictional under Section 404 of the CWA. Wetlands 001 through 006 and 010 through 012, were isolated wetlands and are presumed non-jurisdictional under Section 404 of the CWA. All wetlands identified would be regulated by TDEC under Section 401 of the CWA.

4.2.1 Emergent Wetlands

The seven PEM wetlands were associated with agricultural fields and were heavily disturbed, often showing signs of soil disturbances from planting and harvesting, lack of biodiversity due to agricultural practices, and nutrient loading from fertilizer uses. PEM wetlands comprise 0.99 acre within the Project Site.

W001 and W002 are PEM wetlands in cotton fields. The hydrology indicators at both wetlands are surface water with a depth of one-inch, algal mats, and drainage patterns. Vegetation found in the herb stratum of W001 includes proso millet, yellowseed false pimpernel (*Lindernia dubia*), and scarlet toothcup (*Ammannia coccinea*). Vegetation found in the herb stratum of W002 includes proso millet, yellowseed false pimpernel, and scarlet toothcup. The soils of both wetlands are a loamy-clay texture with prominent redox concentrations in the matrix. The hydric soil indicator includes a depleted matrix. Within both wetlands, the vegetation and the soils have been disturbed by plowing and other agriculture activities. The Tennessee Rapid Assessment Method (TRAM) score for both W001 and W002 is 16, ranking them as low resource value wetlands.

W003 is a PEM wetland in a cotton field. The hydrology indicators at W003 are surface water with a depth of one-inch, algal mats, surface soil cracks, and drainage patterns. Vegetation in the herb stratum includes panicgrass (*Panicum* sp.). The sample area was noted as very disturbed due to agricultural activity. The soils are a loamy clay texture with prominent redox concentrations in the matrix. The hydric soil indicator includes a depleted matrix. Both the vegetation and the soils have been disturbed by plowing and other agriculture activities. The TRAM score for W003 is 12, ranking it a low resource value wetland.

W006 is a PEM wetland in a corn field. The hydrology indicators at W006 are sediment deposits, sparsely vegetated concave surface, and drainage patterns. Vegetation in the herb stratum includes proso millet. The sample area was noted as very disturbed due to agricultural activity. The soils are a silty loam texture with a hydric soil indicator of a depleted matrix. Both vegetation and soils have been disturbed by plowing and other agriculture activities. The TRAM score for W006 is 15, ranking it a low resource value wetland.

W010 and W011 are PEM wetlands in soybean fields. The hydrology indicators at both wetlands are surface soil cracks, sparsely vegetated concave surface, drainage patterns, and geomorphic position. Vegetation in the herb stratum includes purple nutsedge (*Cyperus*

rotundus), redtop panicgrass (*Coleataenia rigidula),* and soybeans. The soils are fine silt texture and no hydric soil indicators were observed due to disruption by plowing. The TRAM score for both W010 and W011 is 9, ranking them as low resource value wetlands.

W012 is a PEM wetland in a soybean field. The hydrology indicators at W012 are algal mats, surface soil cracks, sparsely vegetated concave soil, and drainage patterns. Vegetation in the herb stratum includes purple nutsedge, redtop panicgrass, and carpetweed (*Mollugo verticillata).* The soils are a silt loam texture and have a hydric soil indicator of a depleted matrix. Both the vegetation and the soils have been disturbed by plowing and other agriculture activities. The TRAM score for W012 is 12, ranking it a low resource value wetland.

4.2.2 Forested/Scrub and Shrub Wetlands

W009 is a joint PFO/PSS wetland located between agricultural fields and a road. The hydrology indicators at W009 are water-stained leaves, oxidized rhizospheres on living roots, and drainage patterns. Vegetation found in the shrub layer includes black willow and sweetgum. Vegetation in the herb stratum includes common rush (*Juncus effusus*) and nodding smartweed (*Persicaria lapathifolia).* The soils are silt loam texture with a hydric soil indicator of a depleted matrix. The TRAM score for W009 is 27, ranking it a low resource value wetland.

4.2.3 Forested Wetlands

The two forested wetlands are located on terraces that are above the agricultural fields and comprise 1.42 acres within the Project Site.

W004 is a PFO wetland adjacent to a cotton field. The hydrology indicators at W004 are drift deposits, oxidized rhizospheres on living roots, and drainage patterns. Vegetation found in the tree stratum includes American sycamore, black willow, and sweetgum. Vegetation found in the shrub layer includes mockernut hickory (*Carya tomentosa*), American sycamore, and white sassafras (*Sassafras albidum*). Vegetation in the herb layer includes poison ivy (*Toxicodendron radicans*) and Japanese siltgrass (*Microstegium vimineum*). The soils are a loamy-clay texture with prominent redox concentrations in the matrix. A hydric soil indicator in the soil is a depleted matrix. The TRAM score for W004 is 29, ranking it a low resource value wetland.

W005 is a PFO wetland adjacent to a cotton field. The hydrology indicators at W005 are sediment deposits, drift deposits, water-stained leaves, and crayfish burrows. Vegetation in the overstory stratum includes tulip poplar (*Liriodendron tulipifera*), American elm (*Ulmus americana*), black oak (*Quercus nigra*), and black willow. Vegetation in the shrub layer includes American elm and northern catalpa (*Catalpa speciosa*). Vegetation found in the herb stratum includes Japanese siltgrass and poison ivy. The soils are silty loam texture with a hydric soil indicator of a depleted matrix. The TRAM score for W005 is 32, ranking it a low resource value wetland.

W008 is a PFO fringe wetland located around P001. The hydrology indicators at W008 are water-stained leaves, drainage patterns, and geomorphic position. Vegetation in the tree/overstory stratum includes black willow and sweetgum. Vegetation in the shrub stratum includes black willow and American elm. Vegetation found in the herb stratum includes crossvine (*Bignonia capreolata*), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy.

The soils are silty texture with a hydric soil indicator of a depleted matrix. The TRAM score for W008 is 37, ranking it a low resource value wetland. W008 is connected to S010 via a culvert that flows out of P001.

4.2.4 Emergent/Forested Wetlands

W007 is a joint PEM/PFO and located on the edge of a cotton field in the floodplain of Hyde Creek. The PEM portion of the wetland has hydrology indicators including algal mats, surface soil cracks, and drainage patterns. Vegetation in the herb stratum includes panicgrass. The vegetation in this area is highly disturbed due to agriculture activity. The soil in this wetland is a loamy-clay texture with prominent redox concentrations in the matrix. A hydric soil indicator includes a depleted matrix.

The PFO portion of W007 consists of a hardwood forested area that is directly connected to a wetland located in an agricultural field. The hydrology indicators at W007 are water marks, water-stained leaves, drainage patterns, and moss trim lines. Vegetation in the overstory includes sweetgum, American elm, and hackberry (*Celtis* sp.). Vegetation found in the shrub stratum includes sweetgum, American elm, and laurel oak (*Quercus laurifolia*). Vegetation found in the herb stratum includes poison ivy, trumpet vine (*Campsis radicans*), and Japanese stiltgrass. The soils are silty loam texture with a hydric soil indicator of a depleted matrix. The TRAM score for W007 is 58, ranking it a moderate resource value wetland.

Table 3. Summary of Wetlands within the Project Site

Feature Identifier	Cowardian Classification[1]	TRAM Functional Capacity (Score)[2]	Center Coordinates		Presumed Jurisdiction		Acreage within Project Site
			Latitude	Longitude	Section 404	Section 401	
W001	PEM	Low [16]	35.709154	-89.515669	No	Yes	0.04
W002	PEM	Low [16]	35.708572	-89.515786	No	Yes	0.13
W003	PEM	Low [12]	35.713486	-89.517898	No	Yes	0.06
W004	PFO	Low [29]	35.715684	-89.511766	No	Yes	0.30
W005	PFO	Low [32]	35.714398	-89.512650	No	Yes	0.04
W006	PEM	Low [15]	35.716970	-89.520437	No	Yes	0.14
W007	PEM/PFO	Moderate [58]	35.714583	-89.525608	Yes	Yes	PEM: 0.35 PFO: 1.08
W008	PFO	Low [37]	35.720748	-89.519357	Yes	Yes	0.74
W009	PFO/PSS	Low [27]	35.724463	-89.521438	Yes	Yes	PFO:0.3 PSS: 0.6
W010	PEM	Low [9]	35.731357	-89.517265	No	Yes	0.20
W011	PEM	Low [9]	35.730898	-89.518274	No	Yes	0.05
W012	PEM	Low [12]	35.727292	-89.521797	No	Yes	0.03
					Presumed Jurisdictional under Section 404 Total:		**3.07**
					Presumed Non-Jurisdictional under Section 404 Total:		**0.99**
						Wetlands Total:	**4.06**

1.PEM: Palustrine Emergent Wetland
PSS: Palustrine Scrub/Shrub Wetland
PFO: Palustrine Forested Wetland

4.3 Open Waters

P001 was the only open water pond identified in the Project Site and is palustrine, unconsolidated bottom, permanently flooded, diked/impounded (PUBHh) according to the Cowardian Classification hierarchical structure (Cowardian et al. 1979) (**Table 4 and Appendix A, Figure 7.4**). P001 is an impoundment of S010. This feature is considered jurisdictional under Section 404 of the CWA and regulated by TDEC under Section 401 of the CWA.

Table 4. Summary of Open Waters within the Project Site

Feature Identifier	Cowardian Classification[1]	Center Coordinates		Presumed Jurisdiction		Acreage within Project Site
		Latitude	Longitude	Section 404	Section 401	
P001	PUBHh	35.720654	-89.519437	Yes	Yes	2.9
					Open Waters Total:	**2.9**

1. PUBH: Palustrine Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

4.4 Non-relatively Permanent Waters

Multiple ephemeral features were identified which are not considered to be RPWs and are not expected to carry federal jurisdiction (**Appendix A, Figure 7.1 - Figure 7.6**). The features include Ephemeral Features 001 through 065. These features were dry, did not exhibit an OHWM or a defined bed and bank, and may have had upland rooted plants growing in the bottom of the channel. These features only flow during wet weather events but can provide a hydrological connection between features and downstream waters. These features are also considered wet weather conveyances (WWCs) as evaluated utilizing TDEC's Guidance for Making Hydrologic Determinations.

WWCs do not have OHWMs, defined bed and bank, and do not support the biota of streams; and are therefore differentiated from jurisdictional ephemeral features. Sixty-five of these features were identified comprising a total of 23,250 linear feet. The majority of these features are located in agricultural fields, are erosional features, and result from both natural hydrology flows and irrigation practices. A summary of non-RPW WWC features is included in **Table 3**.

Table 5. Summary of Non-Jurisdictional Features within the Project Site

Feature Identifier	Cowardian Classification[1]	TDEC HD Determination (Score)	TVA Streamside Management Zone	Midpoint Coordinates		Presumed Jurisdiction		Average Width	Linear Feet within Project Site
				Latitude	Longitude	Section 404	Section 401		
E001	R6	WWC [15]	BMPs	35.709924	-89.520605	No	No	4	105
E002	R6	WWC [12]	BMPs	35.711223	-89.523571	No	No	2	57
E003	R6	WWC [14]	BMPs	35.713216	-89.525092	No	No	2	64
E004	R6	WWC [13.5]	BMPs	35.715370	-89.520989	No	No	2	624
E005	R6	WWC [13.5]	BMPs	35.717196	-89.518162	No	No	2	867
E006	R6	WWC [10]	BMPs	35.717218	-89.517955	No	No	2	194
E007	R6	WWC [14.5]	BMPs	35.716154	-89.519039	No	No	3	126
E008	R6	WWC [13]	BMPs	35.712675	-89.515205	No	No	2	29
E009	R6	WWC [18.5]	BMPs	35.712876	-89.515855	No	No	3	278
E010	R6	WWC [12]	BMPs	35.714782	-89.517625	No	No	2	341
E011	R6	WWC [18]	BMPs	35.715359	-89.517650	No	No	4	831
E012	R6	WWC [12]	BMPs	35.716242	-89.515891	No	No	2	231
E013	R6	WWC [9.5]	BMPs	35.716242	-89.515891	No	No	2	57
E014	R6	WWC [15.5]	BMPs	35.717311	-89.514327	No	No	5	904
E015	R6	WWC [11.5]	BMPs	35.713700	-89.513679	No	No	2	173
E016	R6	WWC [17.5]	BMPs	35.716159	-89.511344	No	No	4	255
E017	R6	WWC [8.5]	BMPs	35.720482	-89.515210	No	No	1	307
E018	R6	WWC [14]	BMPs	35.717794	-89.516490	No	No	2	879
E019	R6	WWC [13]	BMPs	35.717852	-89.516404	No	No	2	867
E020	R6	WWC [12]	BMPs	35.717357	-89.516884	No	No	2	400
E021	R6	WWC [10.5]	BMPs	35.718172	-89.520148	No	No	3	205
E022	R6	WWC [11]	BMPs	35.717742	-89.521587	No	No	2	295
E023	R6	WWC [11.5]	BMPs	35.717467	-89.522079	No	No	2	311
E024	R6	WWC [11]	BMPs	35.720443	-89.516906	No	No	2	187
E025	R6	WWC [11]	BMPs	35.720584	-89.517063	No	No	4	133

Feature Identifier	Cowardian Classification[1]	TDEC HD Determination (Score)	TVA Streamside Management Zone	Midpoint Coordinates		Presumed Jurisdiction		Average Width	Linear Feet within Project Site
				Latitude	Longitude	Section 404	Section 401		
E026	R6	WWC [11.5]	BMPs	35.720213	-89.517847	No	No	1	121
E027	R6	WWC [12]	BMPs	35.719638	-89.520228	No	No	2	409
E028	R6	WWC [18]	BMPs	35.718907	-89.523555	No	No	3	587
E029	R6	WWC [11]	BMPs	35.720418	-89.522807	No	No	2	131
E030	R6	WWC [13.5]	BMPs	35.720179	-89.520752	No	No	2	134
E031	R6	WWC [15]	BMPs	35.721569	-89.517535	No	No	2	871
E032	R6	WWC [12]	BMPs	35.723375	-89.517904	No	No	1	778
E033	R6	WWC [15.5]	BMPs	35.724046	-89.518866	No	No	2	306
E034	R6	WWC [15.5]	BMPs	35.724006	-89.521134	No	No	2	210
E035	R6	WWC [13]	BMPs	35.723981	-89.515304	No	No	2	321
E036	R6	WWC [11.5]	BMPs	35.723695	-89.515526	No	No	2	396
E037	R6	WWC [7.5]	BMPs	35.721390	-89.516020	No	No	1	1,004
E038	R6	WWC [9]	BMPs	35.730936	-89.516852	No	No	2	207
E039	R6	WWC [10]	BMPs	35.731598	-89.516586	No	No	2	321
E040	R6	WWC [14]	BMPs	35.731527	-89.518220	No	No	2	456
E041	R6	WWC [11]	BMPs	35.731030	-89.517967	No	No	2	188
E042	R6	WWC [10]	BMPs	35.730267	-89.518726	No	No	1	330
E043	R6	WWC [14.5]	BMPs	35.729351	-89.519240	No	No	2	76
E044	R6	WWC [15.5]	BMPs	35.728892	-89.520356	No	No	2	438
E045	R6	WWC [18]	BMPs	35.728741	-89.520728	No	No	2	161
E046	R6	WWC [17]	BMPs	35.728899	-89.520924	No	No	2	105
E047	R6	WWC [13.5]	BMPs	35.728639	-89.521219	No	No	3	50
E048	R6	WWC [11.5]	BMPs	35.727108	-89.521515	No	No	2	626
E049	R6	WWC [16]	BMPs	35.725794	-89.519283	No	No	1	150
E050	R6	WWC [50]	BMPs	35.725740	-89.517412	No	No	1	330
E051	R6	WWC [10.5]	BMPs	35.725762	-89.518059	No	No	1	163
E052	R6	WWC [17.5]	BMPs	35.725452	-89.516866	No	No	5	135

Feature Identifier	Cowardian Classification[1]	TDEC HD Determination (Score)	TVA Streamside Management Zone	Midpoint Coordinates		Presumed Jurisdiction		Average Width	Linear Feet within Project Site
				Latitude	Longitude	Section 404	Section 401		
E053	R6	WWC [17.5]	BMPs	35.728259	-89.517443	No	No	2	85
E054	R6	WWC [15.5]	BMPs	35.729117	-89.516992	No	No	2	336
E055	R6	WWC [12.5]	BMPs	35.729018	-89.517226	No	No	2	75
E056	R6	WWC [13]	BMPs	35.725412	-89.526711	No	No	2	583
E057	R6	WWC [13]	BMPs	35.724816	-89.526045	No	No	2	192
E058	R6	WWC [13]	BMPs	35.725236	-89.525047	No	No	2	93
E059	R6	WWC [14]	BMPs	35.725393	-89.523865	No	No	5	224
E060	R6	WWC [13]	BMPs	35.727369	-89.524532	No	No	2	1,216
E061	R6	WWC [13]	BMPs	35.729403	-89.525295	No	No	2	156
E062	R6	WWC [13]	BMPs	35.730983	-89.524365	No	No	2	571
E063	R6	WWC [13]	BMPs	35.729783	-89.523903	No	No	2	160
E064	R6	WWC [13]	BMPs	35.728400	-89.524810	No	No	2	423
E065	R6	WWC [13]	BMPs	35.727597	-89.526482	No	No	2	1,517
								Total:	**23,250**

1. R6: A wetland, spring, stream, river, pond, or lake that exists for a short period

4.5 Potential Waters of the U.S.

A total of 22 potential WOTUS, including 18 streams, 3 wetlands, and one pond were identified within the Project Site, totaling approximately 20,751 linear feet of stream channel, 4.06 acres of wetlands, and 2.9 acres of ponds (**Appendix A, Figure 7.1 - Figure 7.6**). A summary of potential WOTUS within the Project Site is included in **Table 2 through Table 4**. Wetland Determination Forms are included in **Appendix B**, and a photographic log with representative photos of Project Site and delineated features is included in **Appendix D.**

5 Regulatory

The Project Site is within the USACE Mississippi Valley Division Memphis District, and the Jackson TDEC Field Office covers Lauderdale County. Due to the number of wetlands and tributaries located on site, it is possible that the proposed Project may result in impacts to jurisdictional waters requiring CWA Section 404/401 permitting. For a Section 404 permit, impacts of less than 0.5 acre of jurisdictional waters can typically be permitted using a Nationwide Permit (NWP). NWPs are usually issued within 45 days of submittal. Solar sites can be permitted under NWP 51 for Land-Based Renewable Energy Generation Facilities or NWP 12 for Linear Transportation Project if impacts are the result of impacts to jurisdictional waters for access roads. Impacts to greater than 0.5 acre of jurisdictional WOTUS would require an CWA Section 404 Individual Permit. Timeframes for issuance of CWA Section 404 Individual Permits are typically 9 to 12 months.

Additionally, application for a General Aquatic Resource Alteration Permit (ARAP) (Tennessee's Section 401 permit) may be required from TDEC Division of Water Resources. General ARAP permits are triggered by specific types of impacts (e.g., road crossings or utility crossings) or by feature impacted (e.g., wetland alterations) and each General ARAP has different impact thresholds for triggering an Individual ARAP.

The TDEC Erosion and Sediment Control Handbook requires an average of 30-foot vegetated buffers applied to all streams not considered Exceptional Tennessee Waters during the construction phase. The impaired waters found on-site require an average of 60-foot vegetated buffers during construction. The 2022 TVA Best Management Practices Guide recommends a minimum Streamside Management Zone Width of 50 feet (TVA 2022). Lauderdale County and the City of Ripley, Tennessee do not have stream or riparian buffer regulations.

6 Results Summary

HDR delineated 18 stream channels, 12 wetlands, one pond, and 65 WWC/ephemeral features within the Project Site. It is the professional judgment of HDR that the 20,751 linear feet of streams, 3.07 acres of wetlands, and 2.9 acres of pond features within the Project Site (**Table 2 and Table 4**) are potentially WOTUS features under Section 404 of the CWA. These features would likely be jurisdictional because they are associated with a relatively permanent water under the pre-2015 regulatory regime currently in place at the time of this report in the state of Tennessee. The approximately 23,250 linear feet of WWC/ephemeral features and 0.99 acres

of isolated wetlands are not anticipated to be jurisdictional. The USACE Memphis District can officially render a final jurisdictional determination for Section 404 requirements through the formal review process. Submittal of a Jurisdictional Determination (JD) and coordination with the USACE Memphis District is recommended to verify that delineated drainage features are not jurisdictional WOTUS and to determine if Project activities would require a Section 404 permit.

Additionally, the 18 stream channels, 12 wetlands, and one pond identified within the Project Site are potentially regulated by TDEC and subject to Section 401 of the CWA. Submittal of a Hydrological Determination (HD) and coordination with the TDEC Jackson Field District is recommended and required for the ARAP permit process.

The Site consists mostly of active agriculture fields. Wetland, stream, and pond features depicted on the NHD, NWI data, and topographic map datasets are not necessarily consistent with HDR's field investigation findings due to the historical and current agricultural land use. The majority of onsite wetlands and streams have been modified or affected by the surrounding agricultural land uses. The exact acreage of developable land cannot be confirmed until the JD is verified by the USACE and the HD is verified by TDEC. Impacts to jurisdictional waters and wetlands will trigger CWA Section 404/401 permitting. Certain activities such as installation of pilings may be permissible within wetlands that are currently being farmed without triggering Section 404 permitting, but still may trigger an ARAP.

7 References

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Appendix A – Figures

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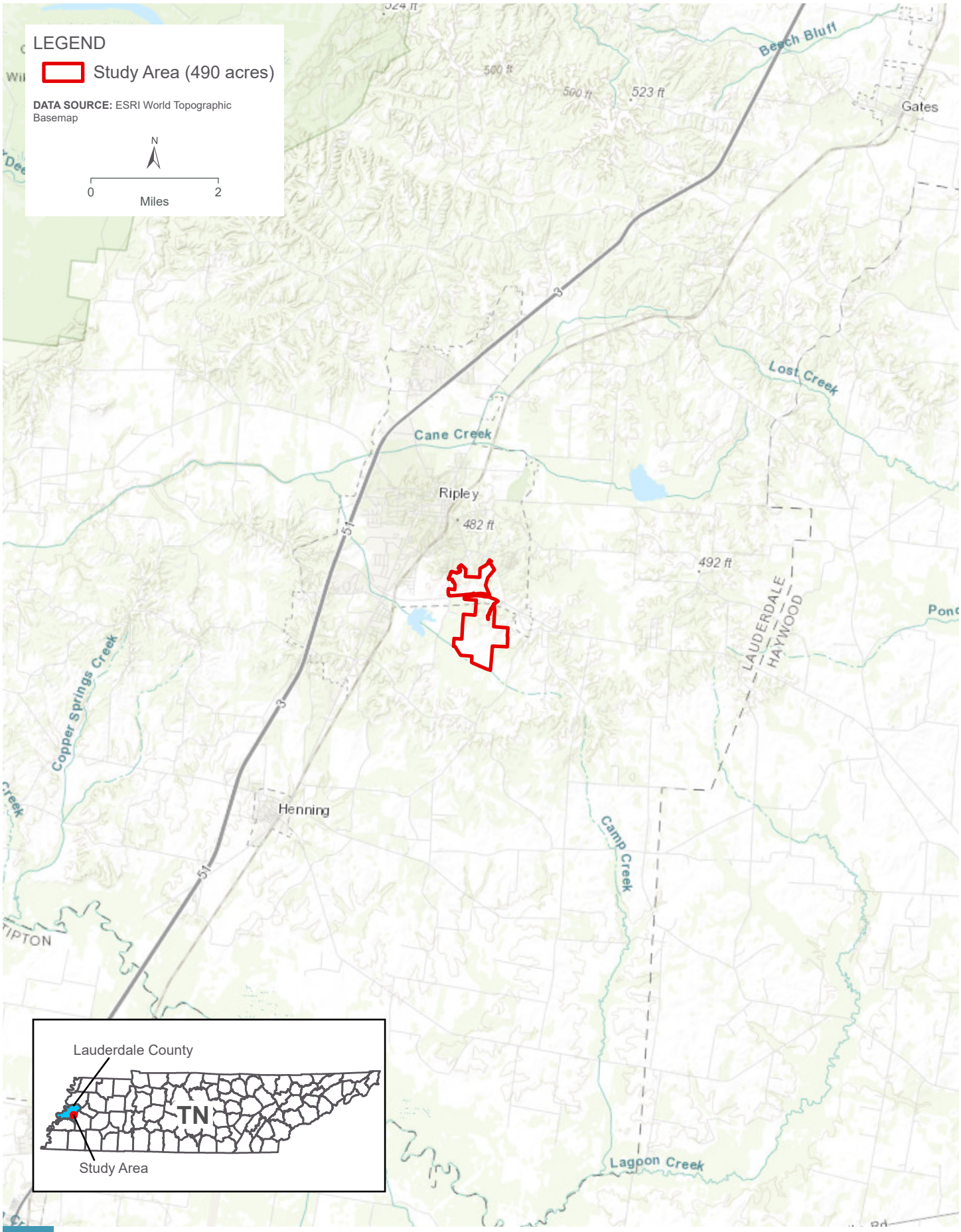
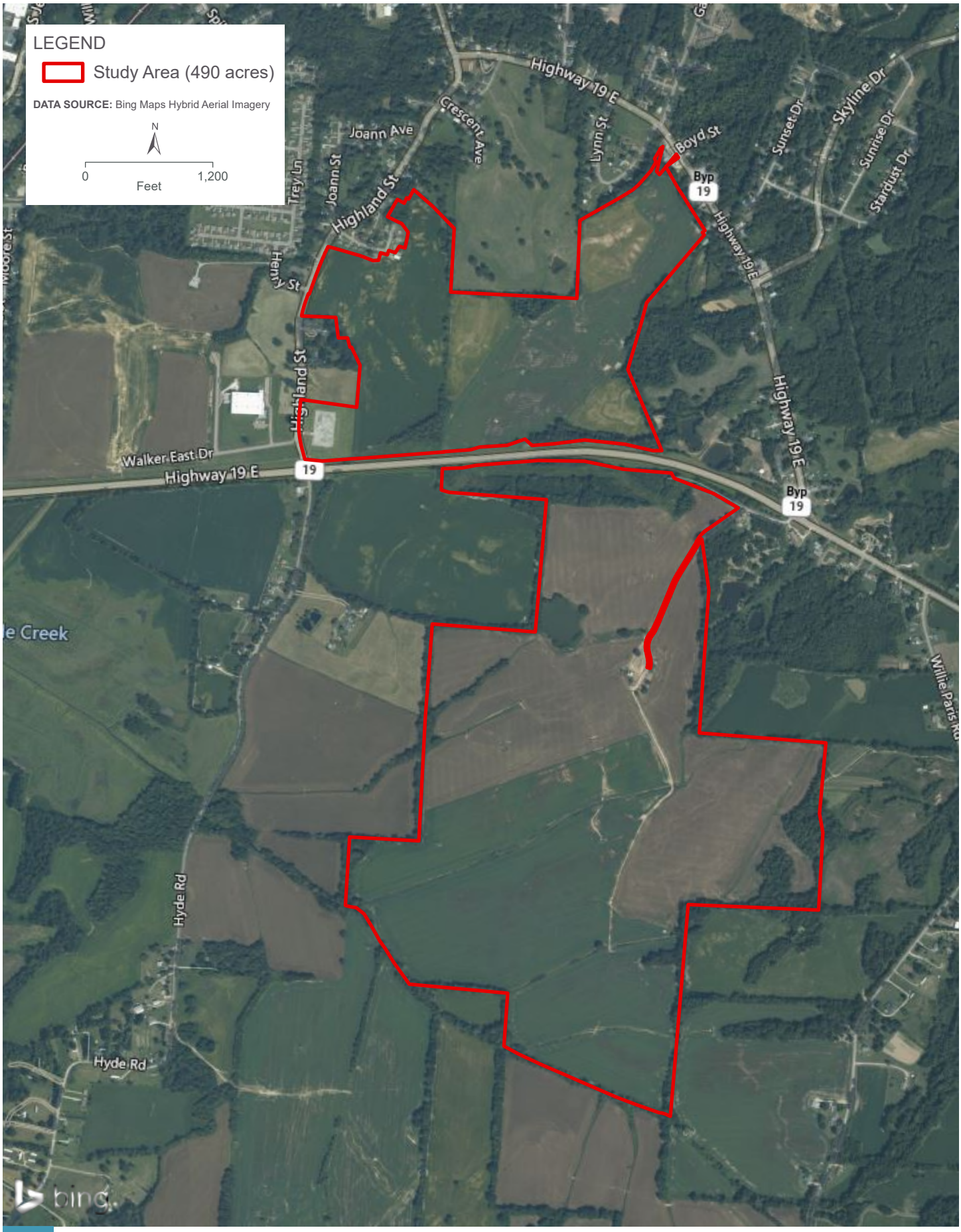


SR RIPLEY II

PROJECT VICINITY

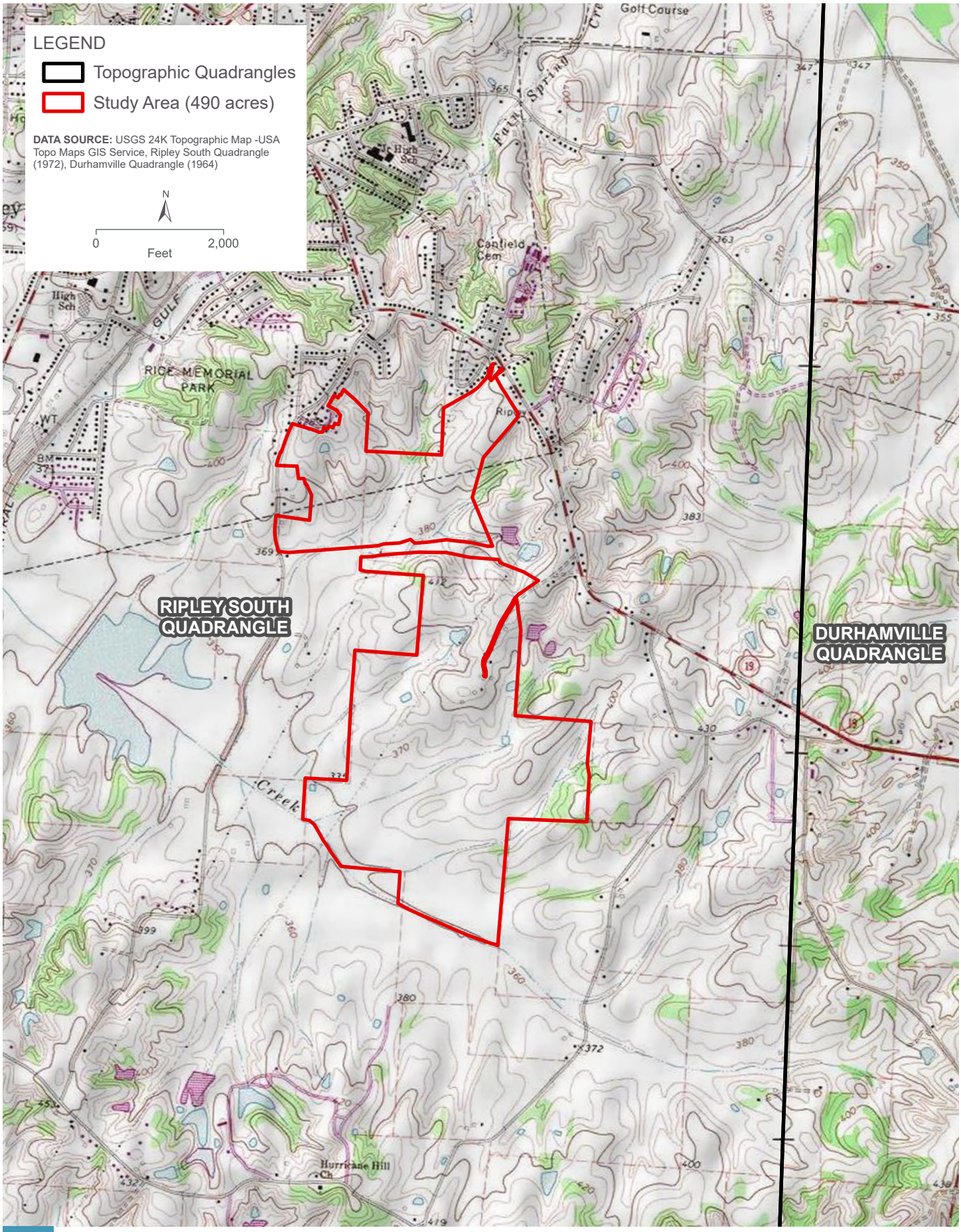
FIGURE 1



SR RIPLEY II

PROJECT AERIAL

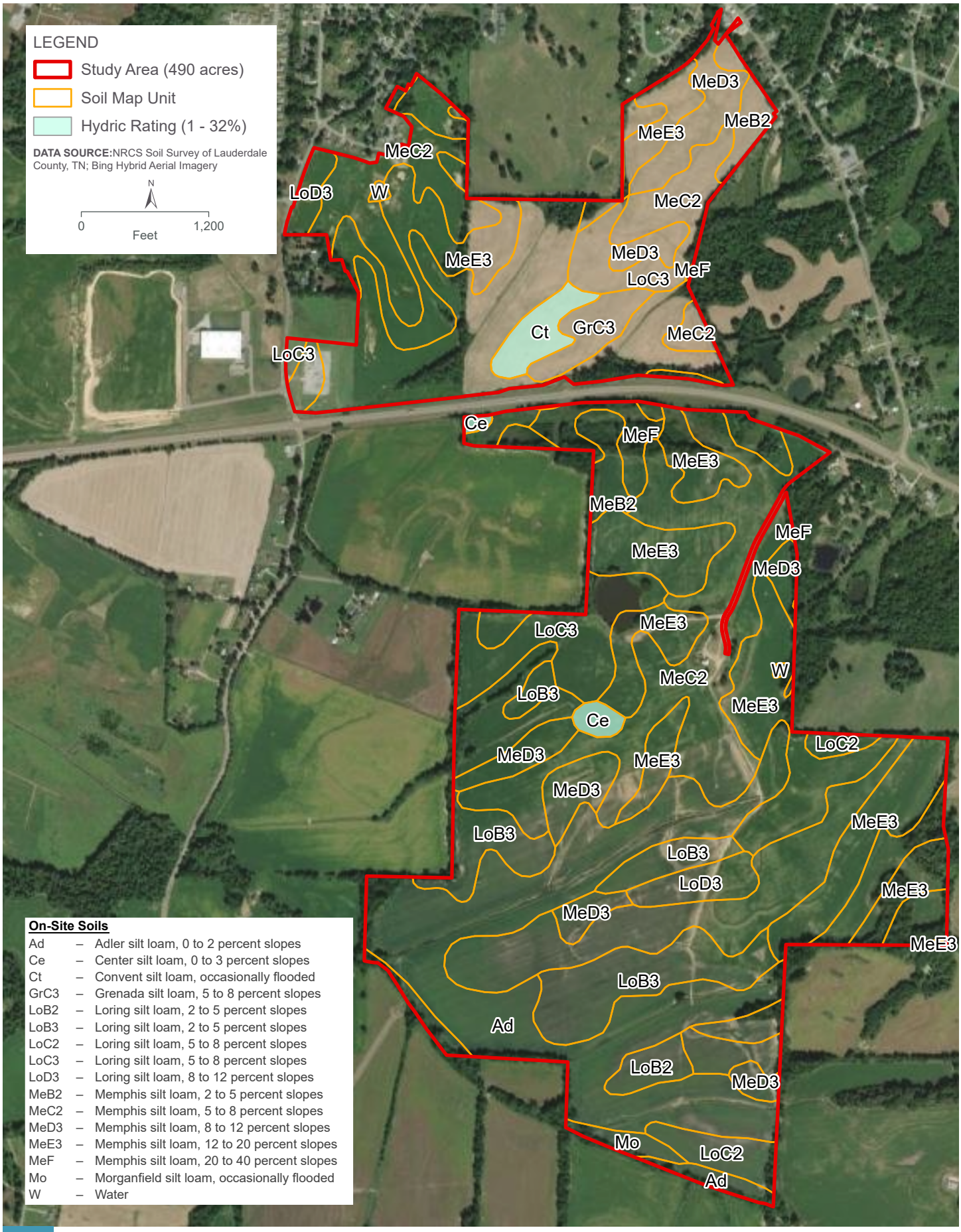
FIGURE 2



SR RIPLEY II

USGS TOPOGRAPHIC QUADRANGLES

FIGURE 3



On-Site Soils

Ad	–	Adler silt loam, 0 to 2 percent slopes
Ce	–	Center silt loam, 0 to 3 percent slopes
Ct	–	Convent silt loam, occasionally flooded
GrC3	–	Grenada silt loam, 5 to 8 percent slopes
LoB2	–	Loring silt loam, 2 to 5 percent slopes
LoB3	–	Loring silt loam, 2 to 5 percent slopes
LoC2	–	Loring silt loam, 5 to 8 percent slopes
LoC3	–	Loring silt loam, 5 to 8 percent slopes
LoD3	–	Loring silt loam, 8 to 12 percent slopes
MeB2	–	Memphis silt loam, 2 to 5 percent slopes
MeC2	–	Memphis silt loam, 5 to 8 percent slopes
MeD3	–	Memphis silt loam, 8 to 12 percent slopes
MeE3	–	Memphis silt loam, 12 to 20 percent slopes
MeF	–	Memphis silt loam, 20 to 40 percent slopes
Mo	–	Morganfield silt loam, occasionally flooded
W	–	Water

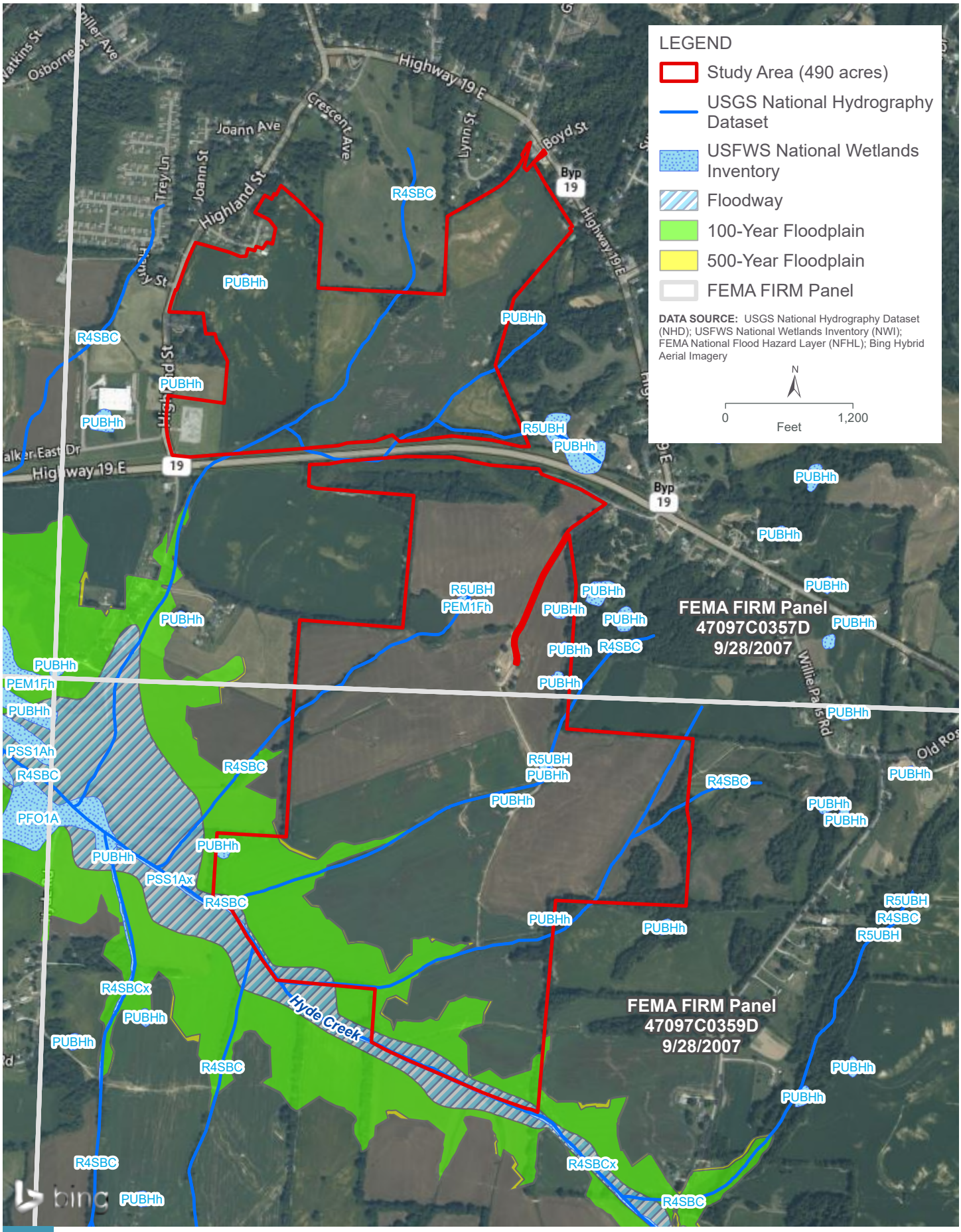
HDR

SILICON RANCH

SR RIPLEY II

NRCS SOILS SURVEY OF LAUDERDALE COUNTY, TN

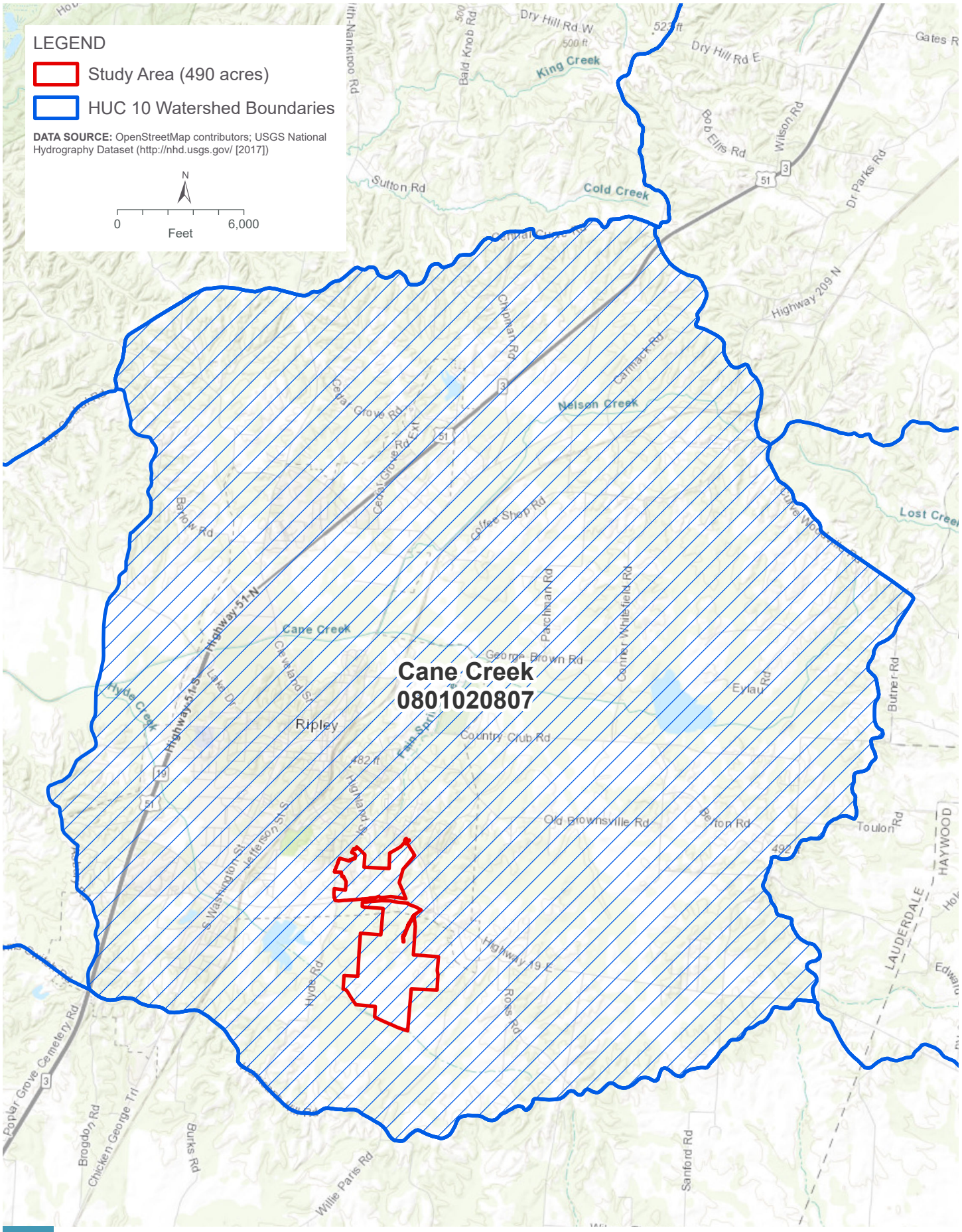
FIGURE 4



SR RIPLEY II

NHD, NWI, AND FEMA FLOOD HAZARD DATA

FIGURE 5



SILICON RANCH

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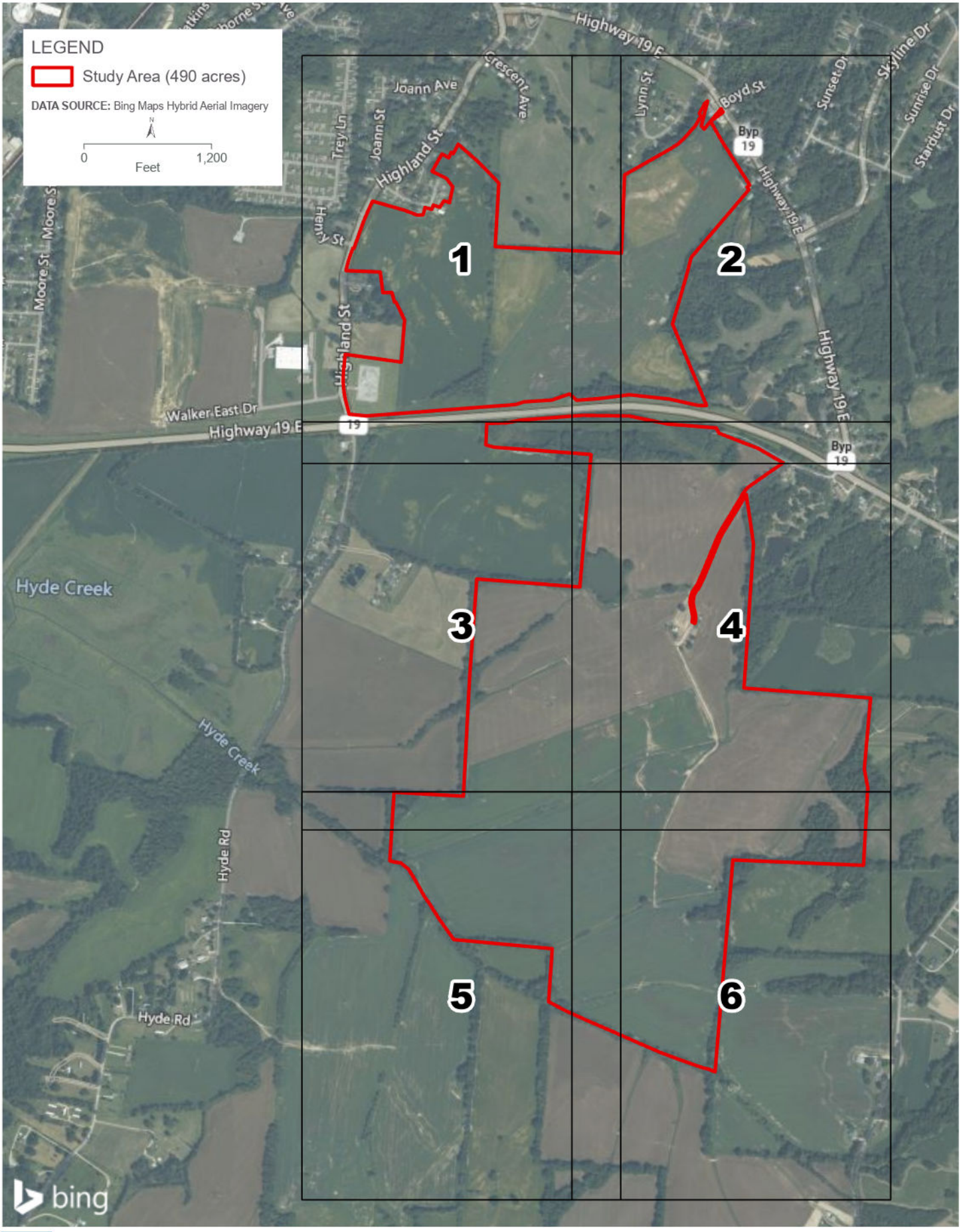
HUC 10 WATERSHED

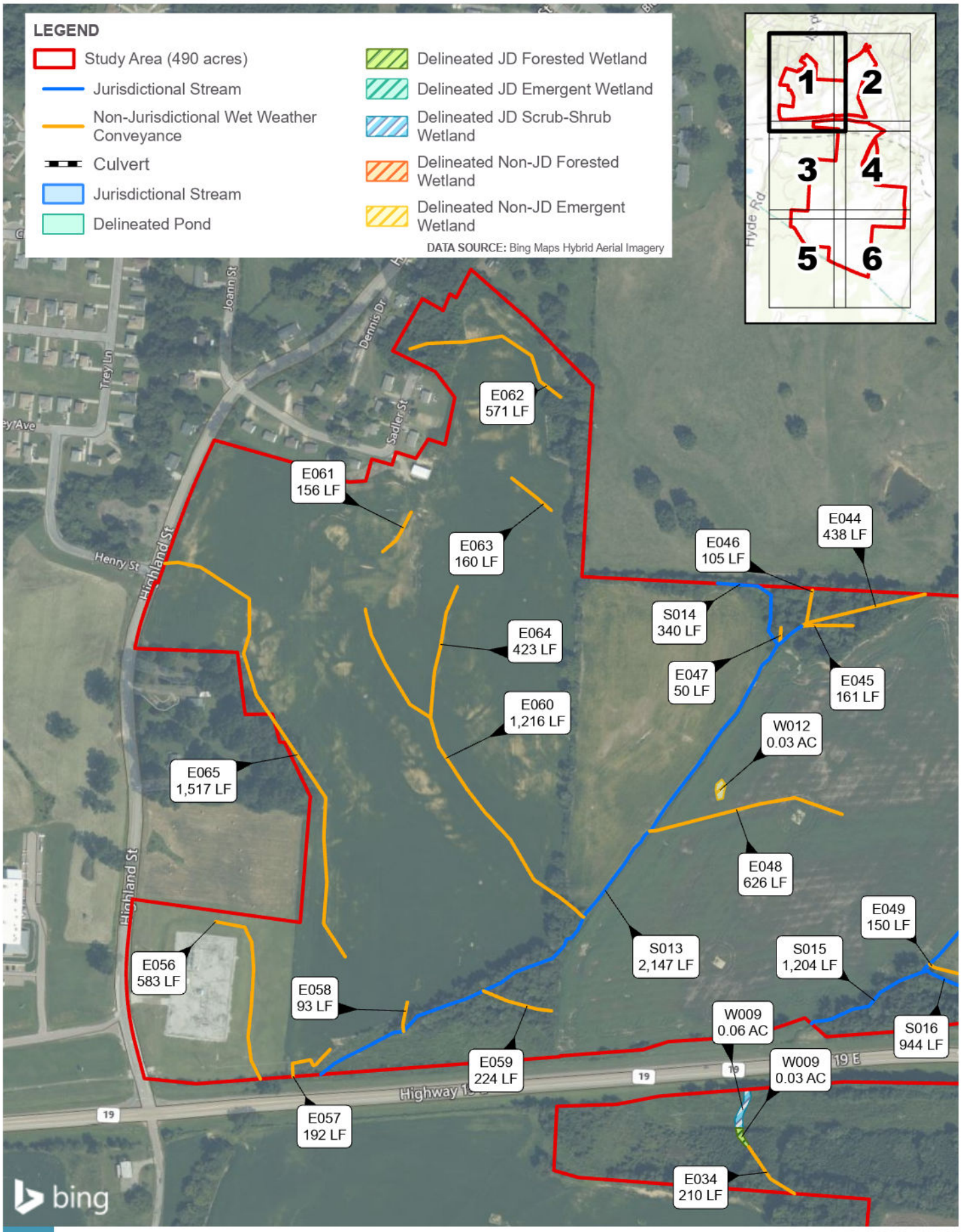
FIGURE 6



SR RIPLEY II

DELINEATED FEATURES - OVERVIEW

FIGURE 7



SILICON RANCH

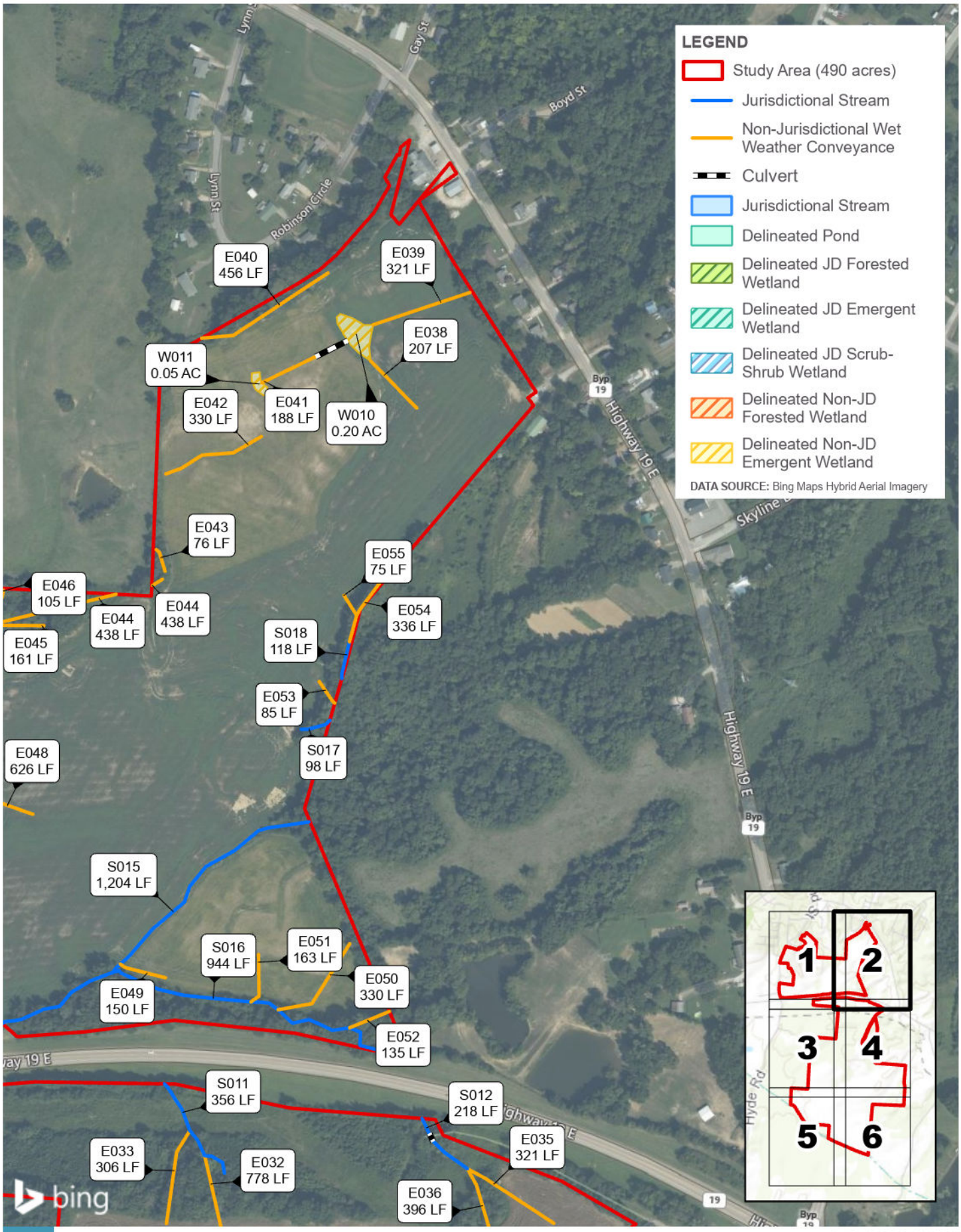
N

0 Feet 400

SR RIPLEY II

DELINEATED FEATURES

FIGURE 7.1



SILICON RANCH

N

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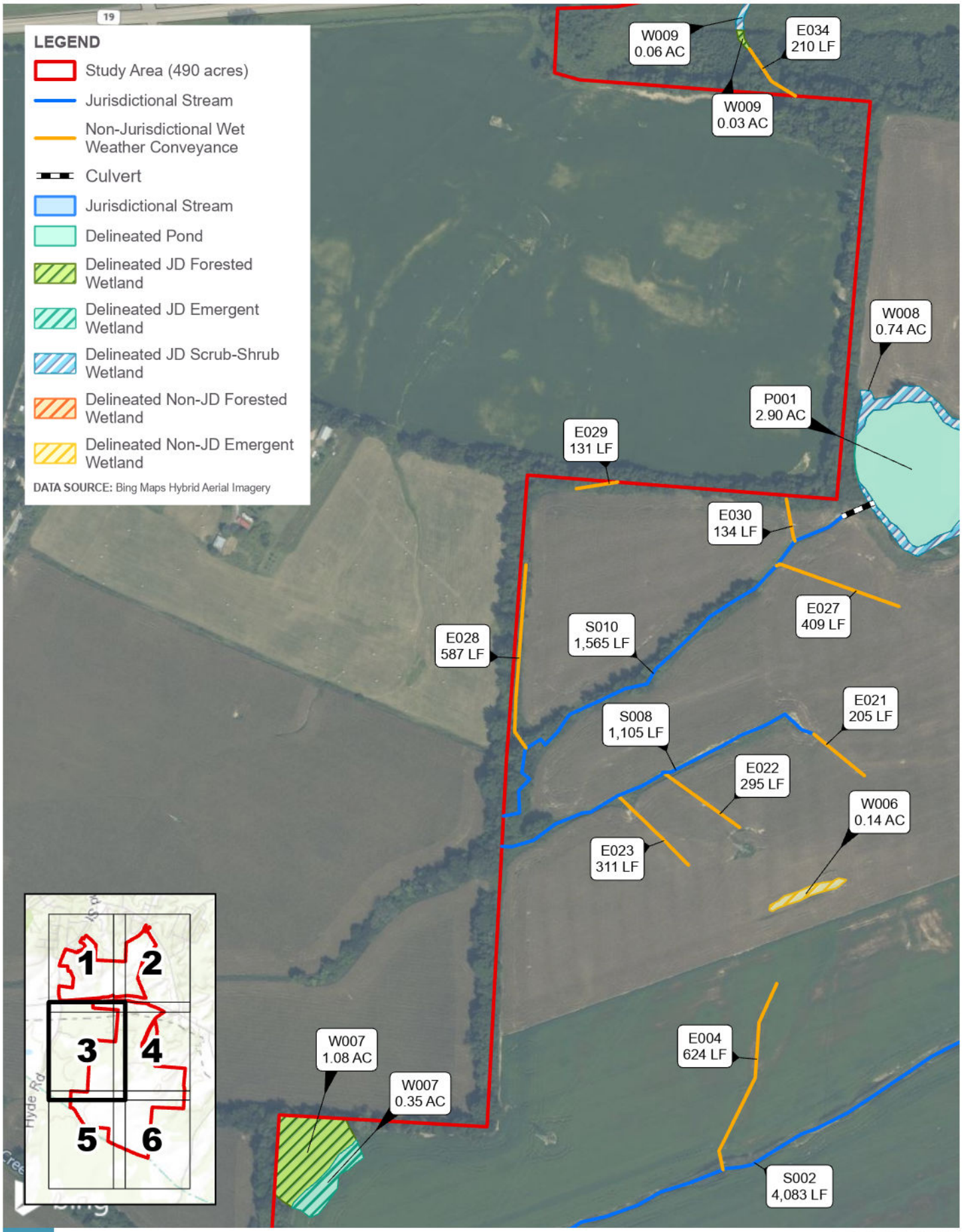
SR RIPLEY II

DELINEATED FEATURES

FIGURE 7.2

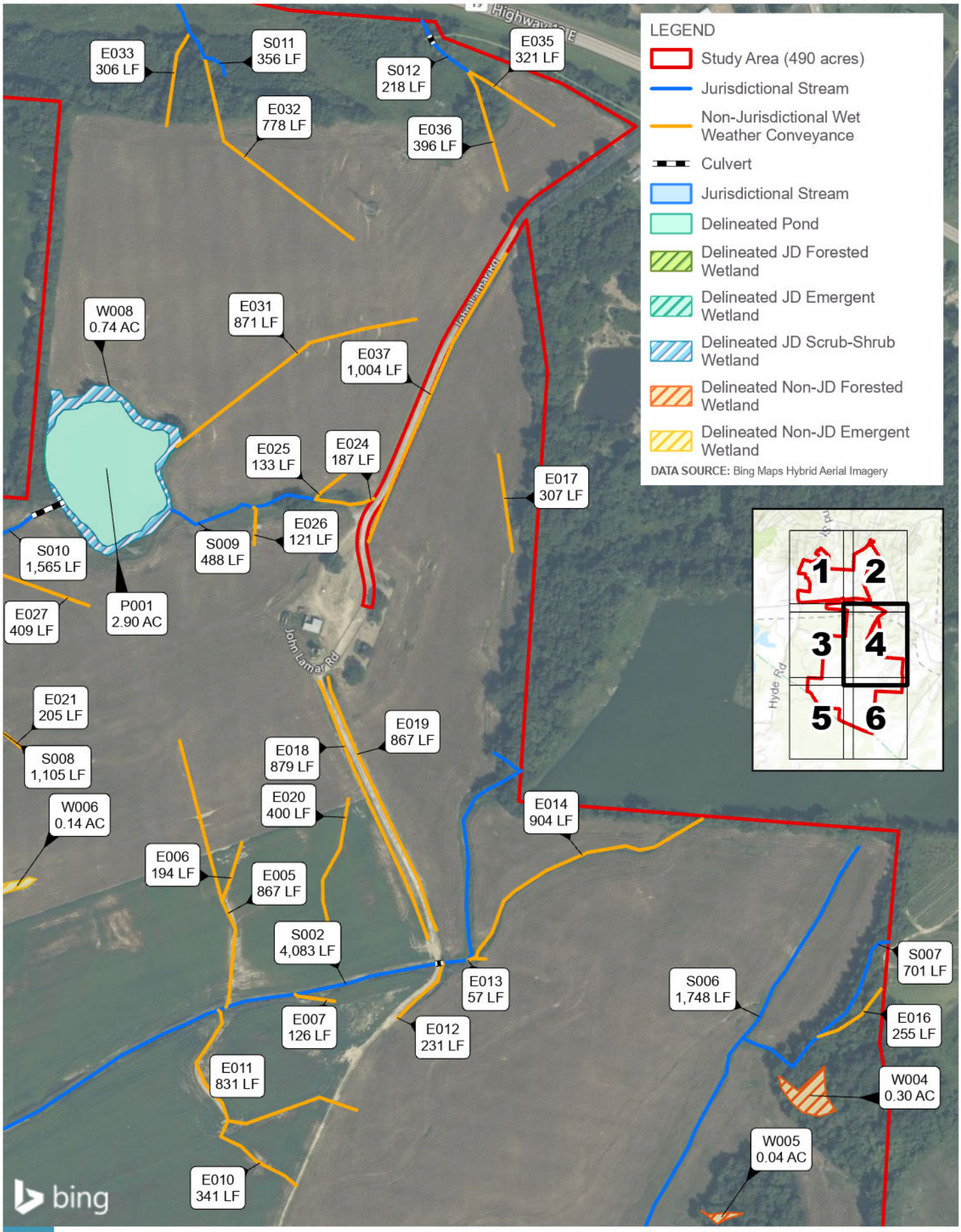


SILICON RANCH

SR RIPLEY II

DELINEATED FEATURES

FIGURE 7.3



SILICON RANCH

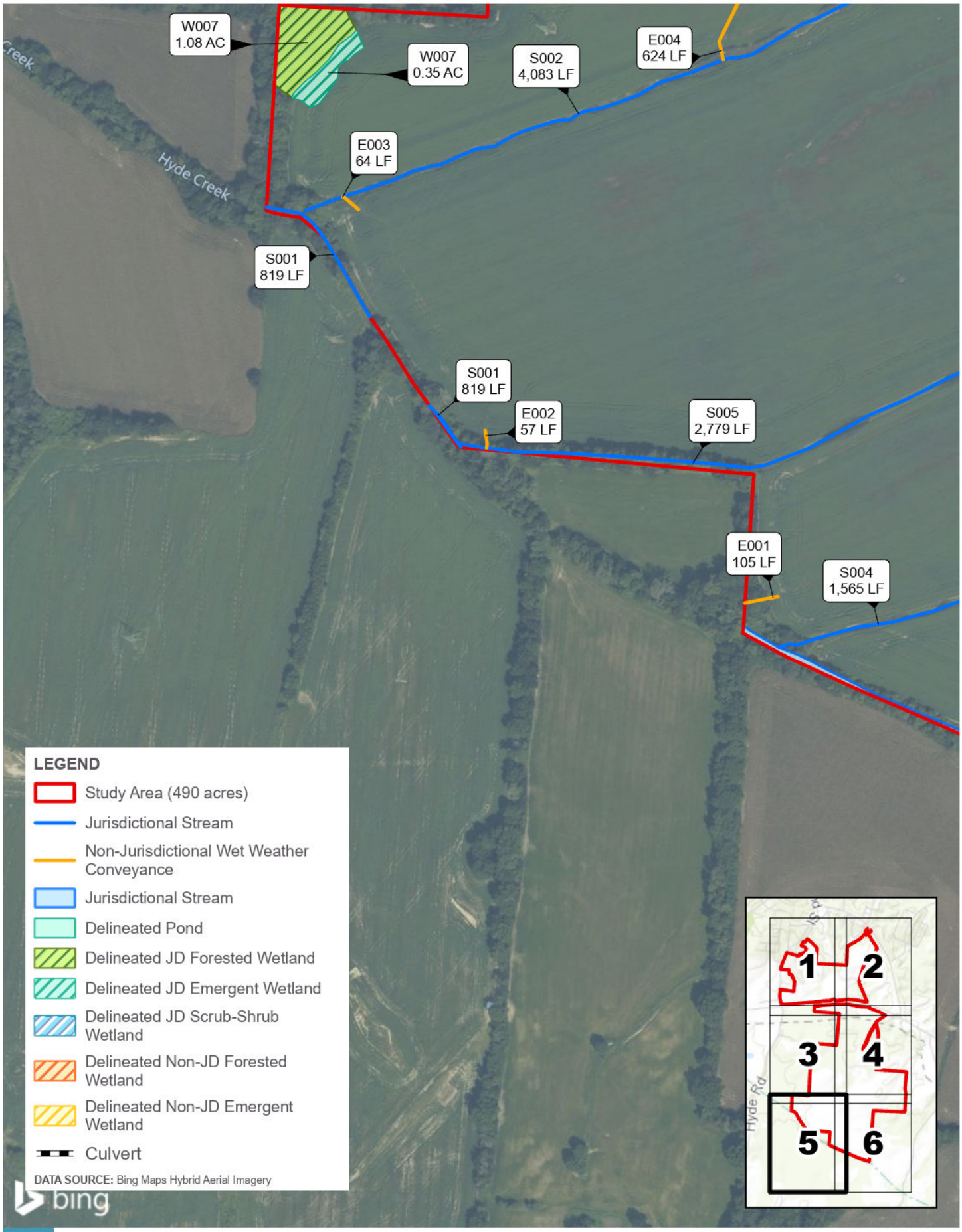
N

0 Feet 400

SR RIPLEY II

DELINEATED FEATURES

FIGURE 7.4



SILICON RANCH

N

0 Feet 400

SR RIPLEY II

DELINEATED FEATURES

FIGURE 7.5

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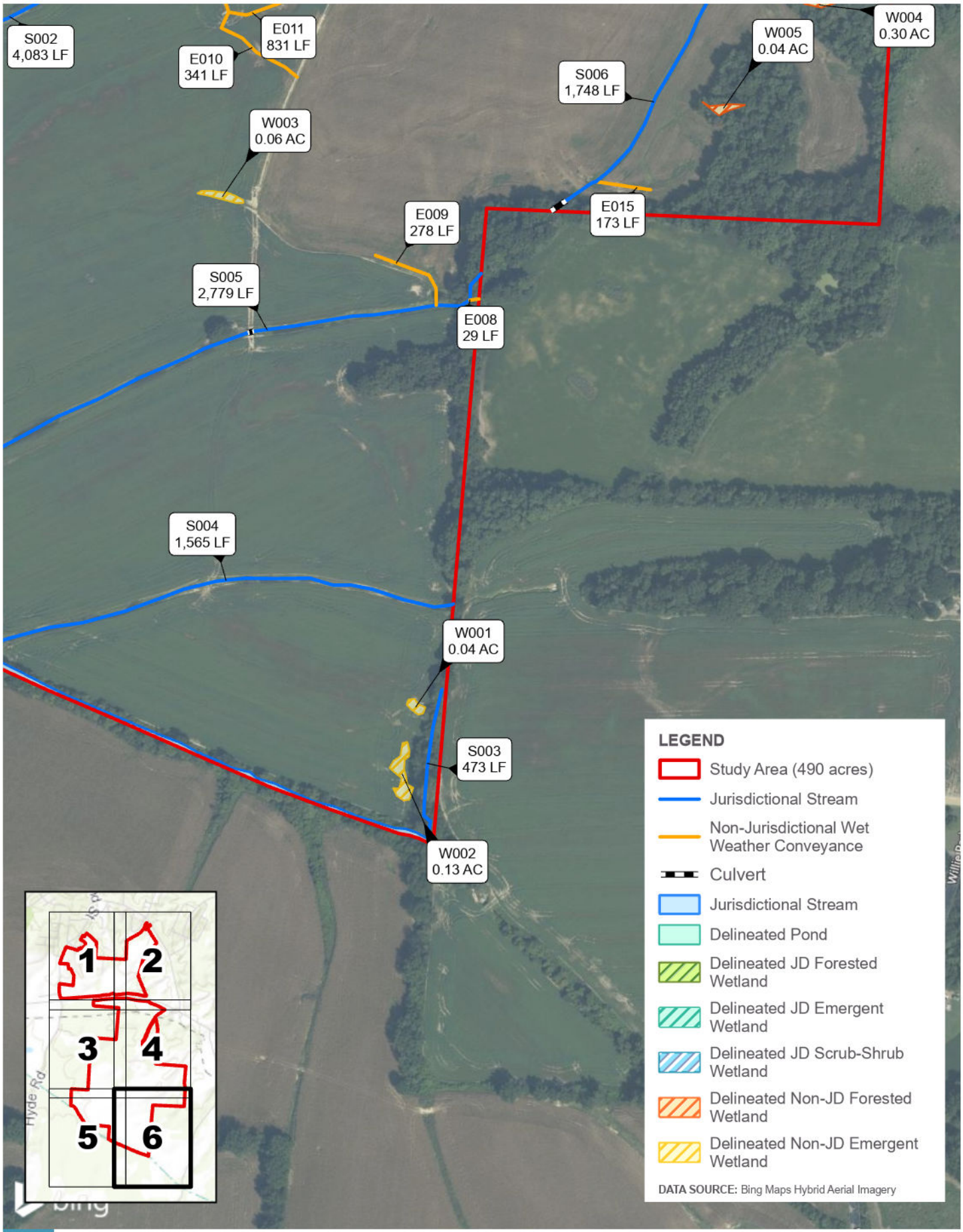

HDR

SILICON RANCH

N

0 400

Feet

SR RIPLEY II

DELINEATED FEATURES

FIGURE 7.6

\\CLTSMAIN\GIS_DATA\GIS\PROJECTS\10532_SILICONRANCHCORPORATION\10351685_RIPLEYII_ENV\7.2_WIP\MAP_DOCS\APRX\RIPLEYII_TDEC.APRX DATE: 3/19/2024

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B

Appendix B – Wetland and Stream Data Forms

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C

Appendix C – Weather Conditions

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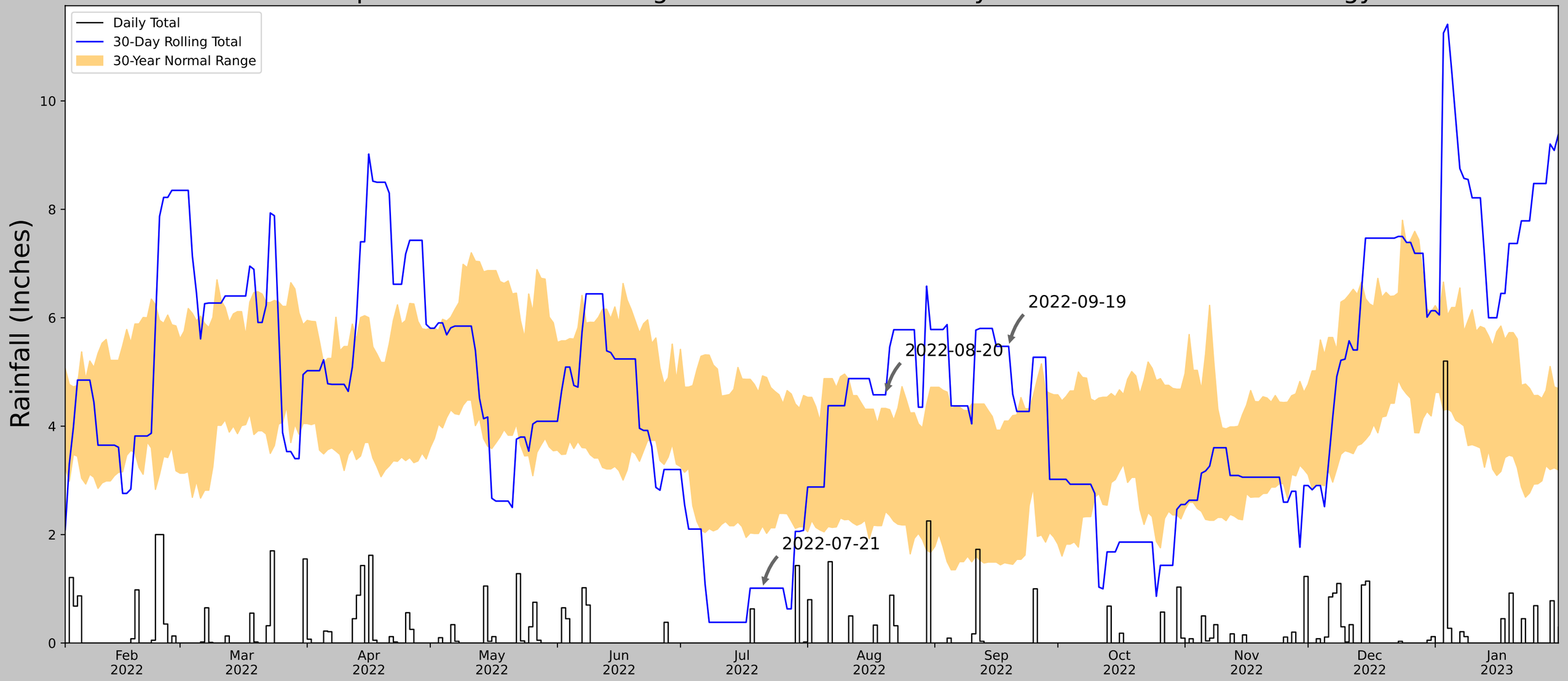
Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.723829, -89.517959
Observation Date	2022-09-19
Elevation (ft)	395.479
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Dry Season

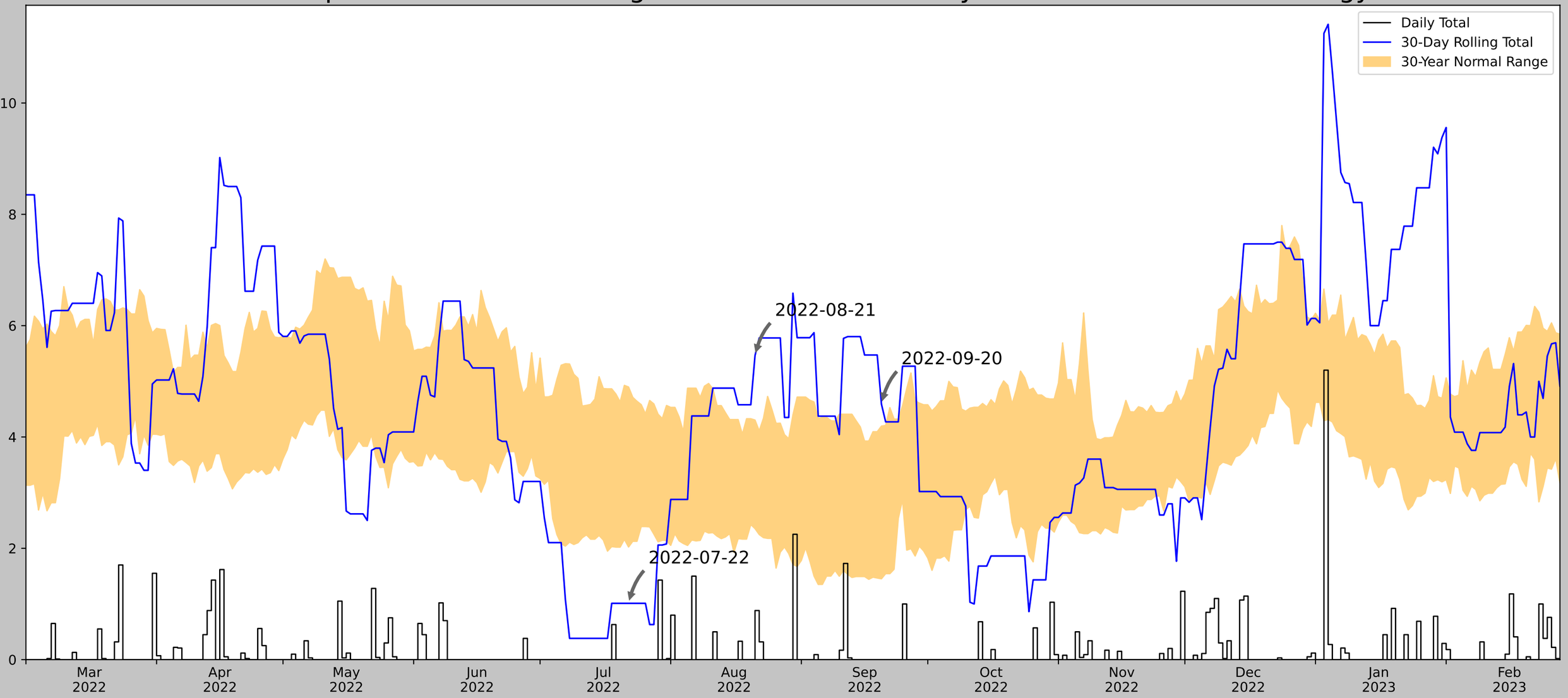
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-19	1.466142	4.094488	5.472441	Wet	3	3	9
2022-08-20	2.427165	4.327953	4.57874	Wet	3	2	6
2022-07-21	2.161024	4.927559	1.011811	Dry	1	1	1
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BROWNSVILLE	35.5894, -89.2586	330.053	17.271	65.426	8.902	11173	88
BROWNSVILLE 1.0 SE	35.5841, -89.2423	348.097	0.986	18.044	0.461	20	2
ALAMO 1 N	35.7978, -89.1175	330.053	16.432	0.0	7.394	95	0
SOMERVILLE 10N	35.3883, -89.3717	370.079	15.282	40.026	7.489	23	0
RIPLEY	35.7178, -89.4986	399.934	16.132	69.881	8.387	41	0
COVINGTON 3 SW	35.5497, -89.7	384.843	24.958	54.79	12.599	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.723829, -89.517959
Observation Date	2022-09-20
Elevation (ft)	395.479
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Dry Season

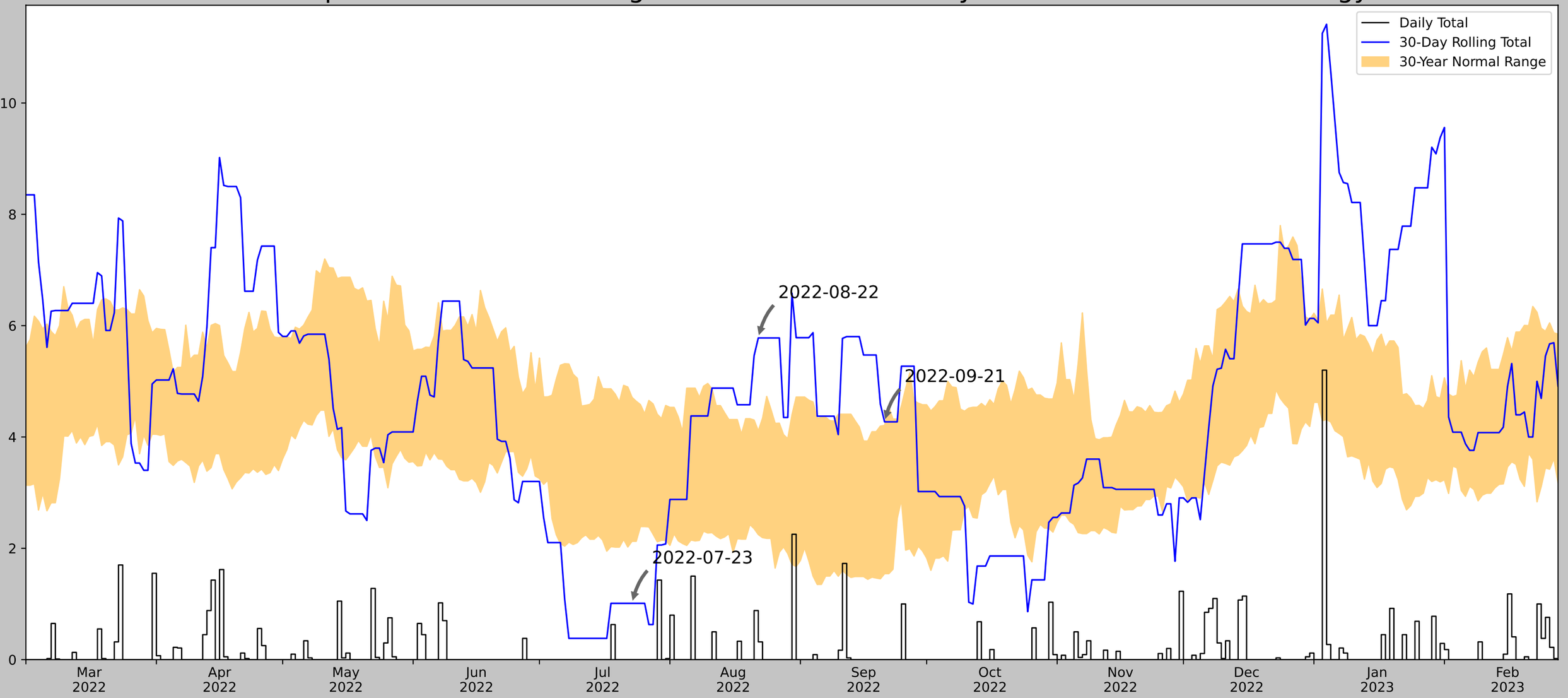
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-20	1.452362	4.195669	4.590551	Wet	3	3	9
2022-08-21	2.353937	4.304331	5.46063	Wet	3	2	6
2022-07-22	2.023228	4.898032	1.011811	Dry	1	1	1
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BROWNSVILLE	35.5894, -89.2586	330.053	17.271	65.426	8.902	11173	88
BROWNSVILLE 1.0 SE	35.5841, -89.2423	348.097	0.986	18.044	0.461	20	2
ALAMO 1 N	35.7978, -89.1175	330.053	16.432	0.0	7.394	95	0
SOMERVILLE 10N	35.3883, -89.3717	370.079	15.282	40.026	7.489	23	0
RIPLEY	35.7178, -89.4986	399.934	16.132	69.881	8.387	41	0
COVINGTON 3 SW	35.5497, -89.7	384.843	24.958	54.79	12.599	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.723829, -89.517959
Observation Date	2022-09-21
Elevation (ft)	395.479
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Dry Season

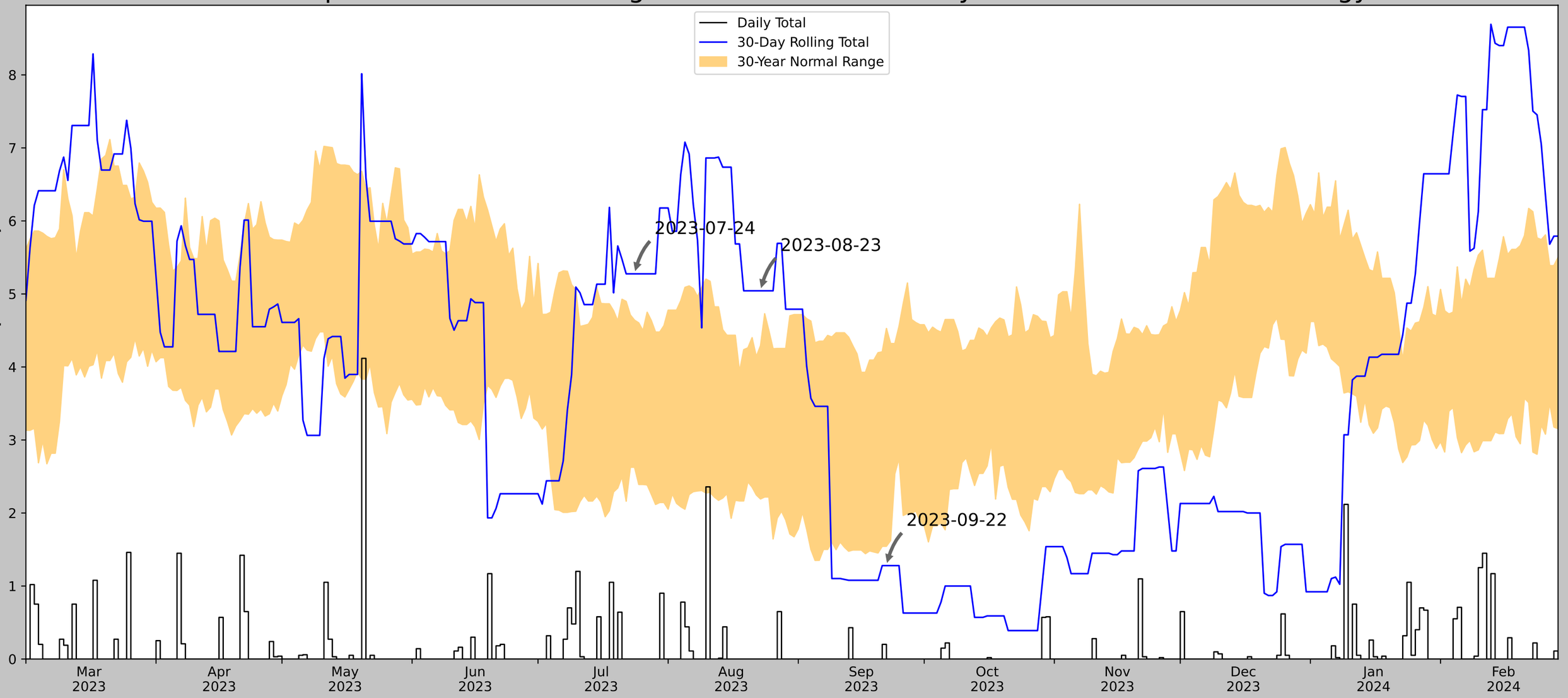
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-21	1.544095	4.206693	4.271654	Wet	3	3	9
2022-08-22	2.247244	4.110236	5.779528	Wet	3	2	6
2022-07-23	2.126378	4.711811	1.011811	Dry	1	1	1
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BROWNSVILLE	35.5894, -89.2586	330.053	17.271	65.426	8.902	11173	88
BROWNSVILLE 1.0 SE	35.5841, -89.2423	348.097	0.986	18.044	0.461	20	2
ALAMO 1 N	35.7978, -89.1175	330.053	16.432	0.0	7.394	95	0
SOMERVILLE 10N	35.3883, -89.3717	370.079	15.282	40.026	7.489	23	0
RIPLEY	35.7178, -89.4986	399.934	16.132	69.881	8.387	41	0
COVINGTON 3 SW	35.5497, -89.7	384.843	24.958	54.79	12.599	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



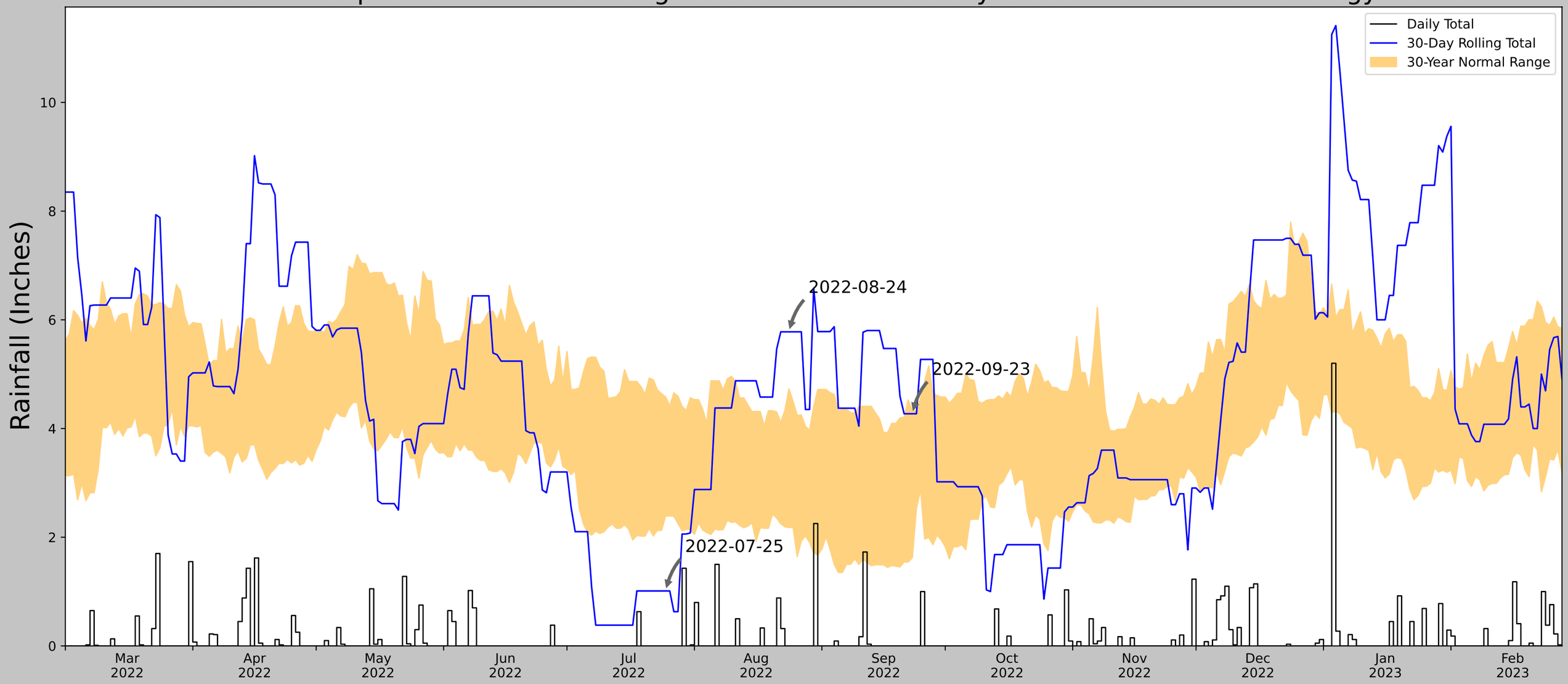
Coordinates	35.723829, -89.517959
Observation Date	2023-09-22
Elevation (ft)	395.479
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-09-22	1.544095	4.527953	1.279528	Dry	1	3	3
2023-08-23	2.192126	4.290945	5.043307	Wet	3	2	6
2023-07-24	2.626378	4.640945	5.275591	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BROWNSVILLE	35.5894, -89.2586	330.053	17.271	65.426	8.902	11150	90
BROWNSVILLE 1.0 SE	35.5841, -89.2423	348.097	0.986	18.044	0.461	43	0
ALAMO 1 N	35.7978, -89.1175	330.053	16.432	0.0	7.394	95	0
SOMERVILLE 10N	35.3883, -89.3717	370.079	15.282	40.026	7.489	23	0
RIPLEY	35.7178, -89.4986	399.934	16.132	69.881	8.387	41	0
COVINGTON 3 SW	35.5497, -89.7	384.843	24.958	54.79	12.599	1	0



Coordinates	35.723829, -89.517959
Observation Date	2022-09-23
Elevation (ft)	395.479
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Dry Season

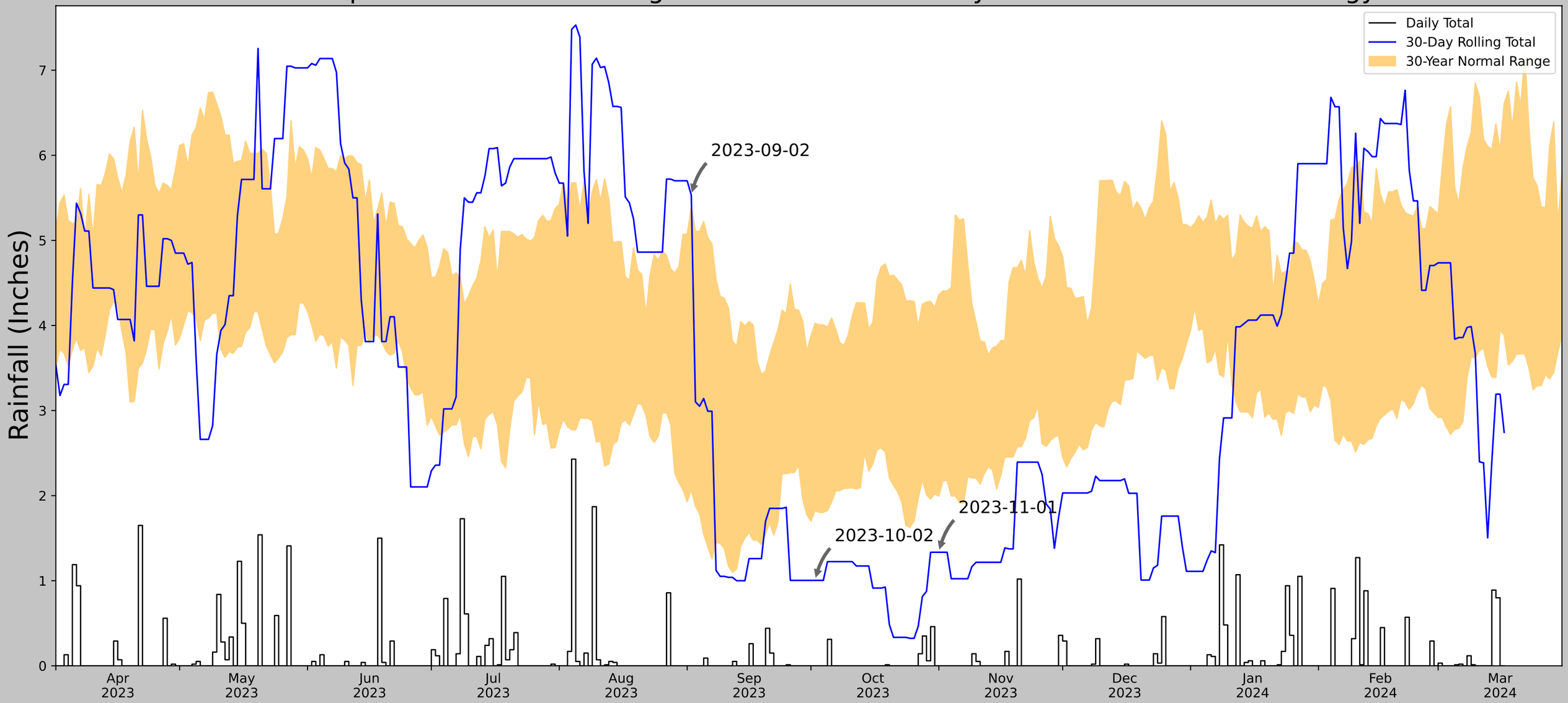
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-23	1.623622	4.320866	4.271654	Normal	2	3	6
2022-08-24	2.178347	4.729134	5.779528	Wet	3	2	6
2022-07-25	2.390945	4.581496	1.011811	Dry	1	1	1
Result							Normal Conditions - 13

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BROWNSVILLE	35.5894, -89.2586	330.053	17.271	65.426	8.902	11173	89
BROWNSVILLE 1.0 SE	35.5841, -89.2423	348.097	0.986	18.044	0.461	20	1
ALAMO 1 N	35.7978, -89.1175	330.053	16.432	0.0	7.394	95	0
SOMERVILLE 10N	35.3883, -89.3717	370.079	15.282	40.026	7.489	23	0
RIPLEY	35.7178, -89.4986	399.934	16.132	69.881	8.387	41	0
COVINGTON 3 SW	35.5497, -89.7	384.843	24.958	54.79	12.599	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	35.723829, -89.517959
Observation Date	2023-11-01
Elevation (ft)	395.479
Drought Index (PDSI)	Mild drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-11-01	1.994488	4.364173	1.334646	Dry	1	3	3
2023-10-02	1.825197	4.025591	1.003937	Dry	1	2	2
2023-09-02	2.066142	5.389764	5.531496	Wet	3	1	3
Result							Drier than Normal - 8

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
JACKSON MCKELLAR- SIPES AP	35.5933, -88.9169	423.885	34.927	28.406	16.709	11047	90
JACKSON EXP STN	35.6214, -88.8456	399.934	4.451	23.951	2.11	305	0

D

Appendix D – Site Photographs

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Photo 1. W001-W, PEM, facing west.

Photo 2. W001-UPL, facing east.

Photo 3. W002-W, PEM, facing south.

Photo 4. W002-UPL, facing northeast.

Photo 5. W003-W, PEM, facing west.

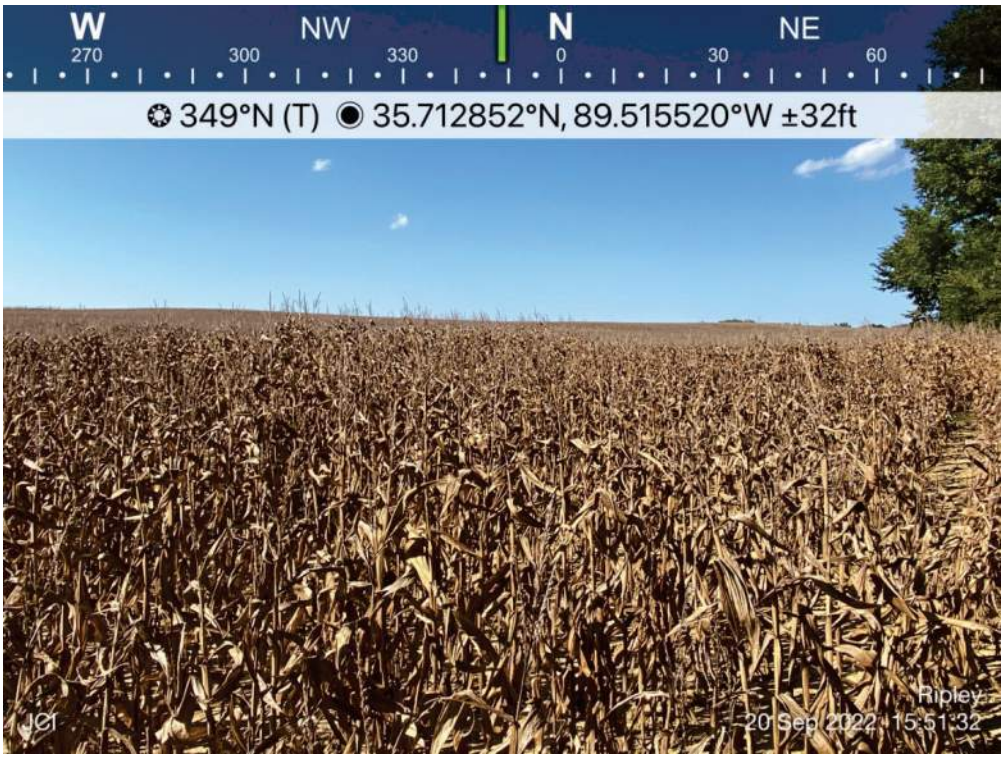

Photo 6. W003-UPL, facing north.

Photo 7. W004-W, PFO, facing east.

Photo 8. W004-UPL, facing southeast.

Photo 9. W005-W, PFO, facing southwest.

Photo 10. W005-UPL, facing northwest.

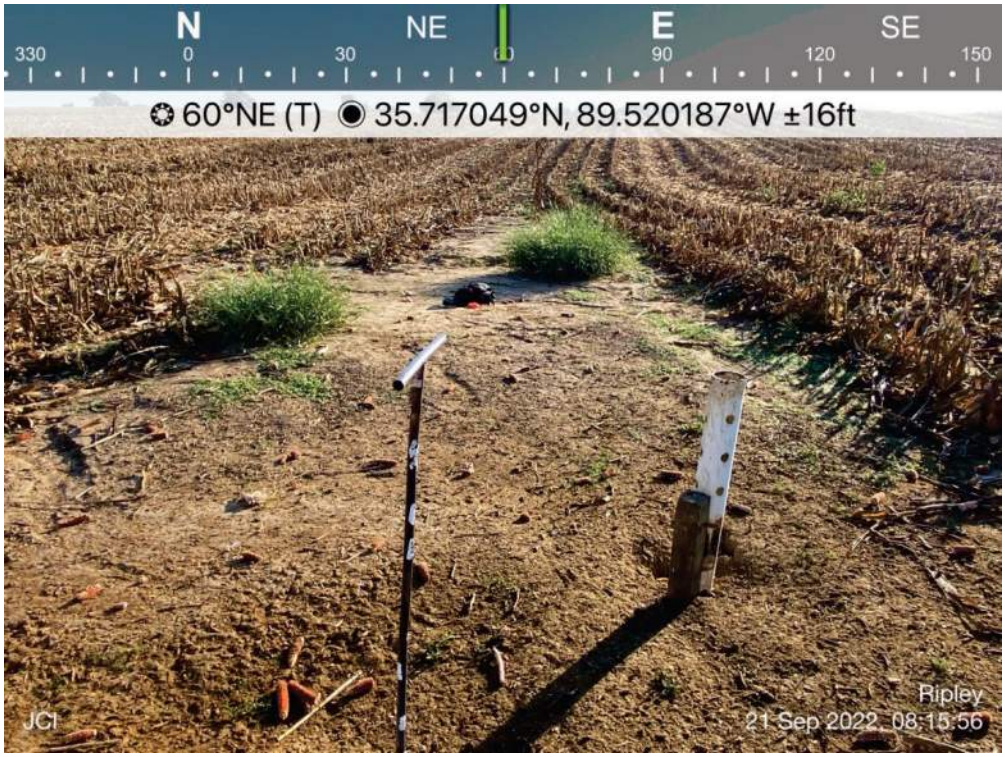

Photo 11. W006-W, PEM, facing northeast.

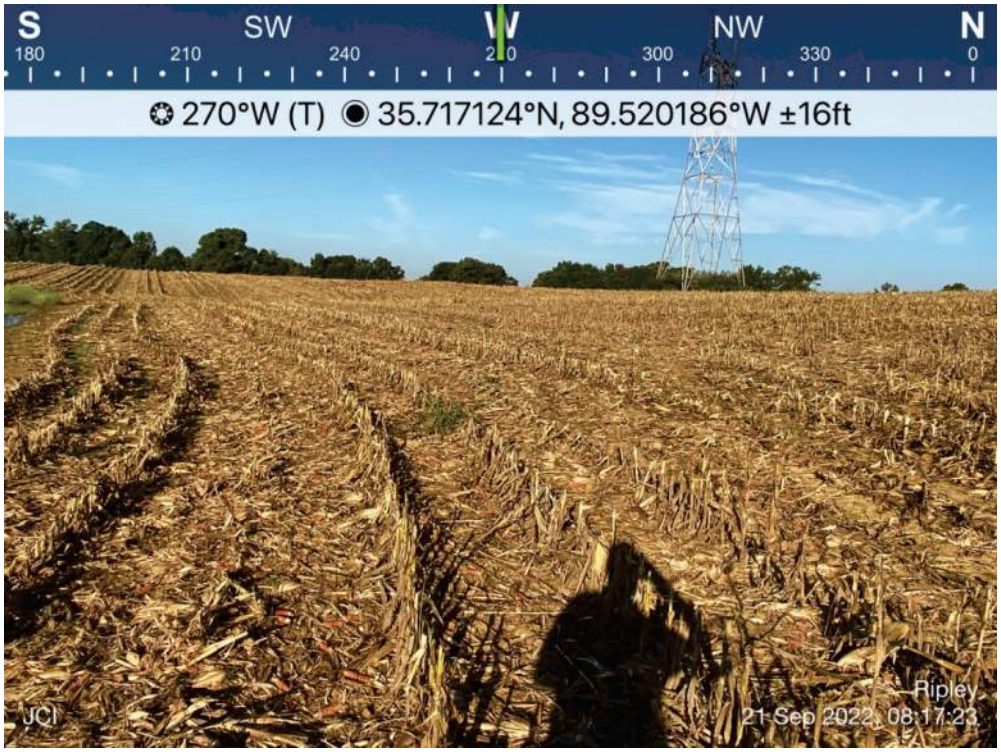

Photo 12. W006-UPL, facing west.

Photo 13. W007-W, PFO, facing southwest.

Photo 14. W007-UPL, facing west.

Photo 15. W008-W, PFO, facing west.

Photo 16. W008-UPL, facing north.

Photo 17. W009-W, PSS, facing southwest.

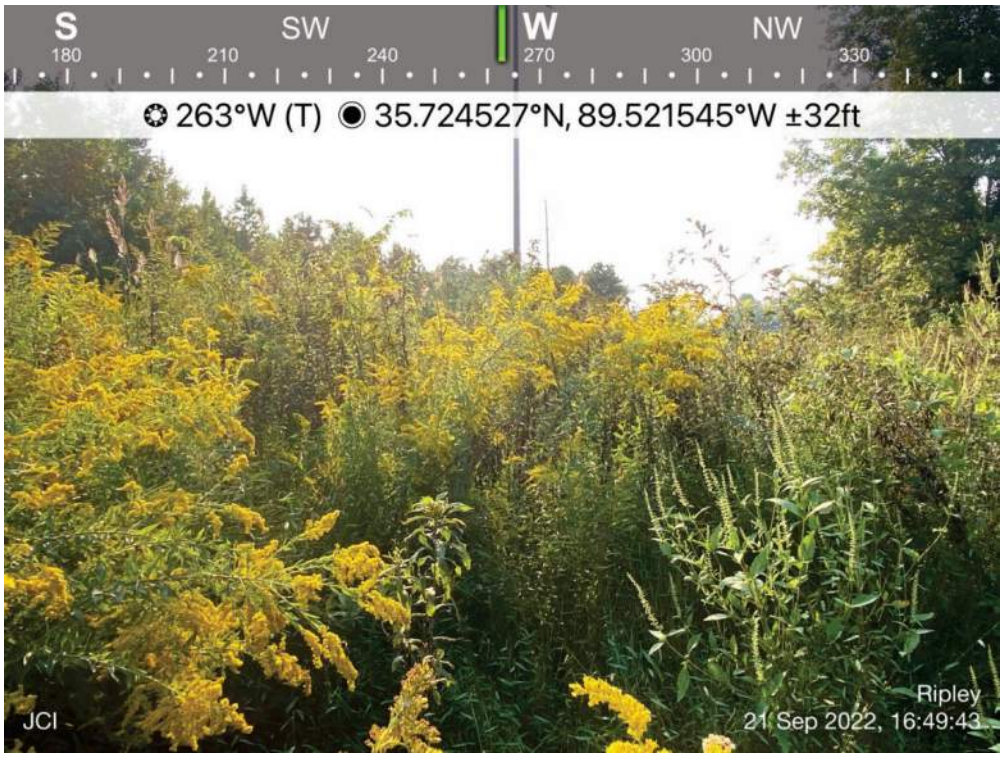

Photo 18. W009-UPL, facing west.

Photo 19. W010-W, PEM, facing south.

Photo 20. W010-UPL, facing northeast.

Photo 21. W011-W, PEM, facing southeast.

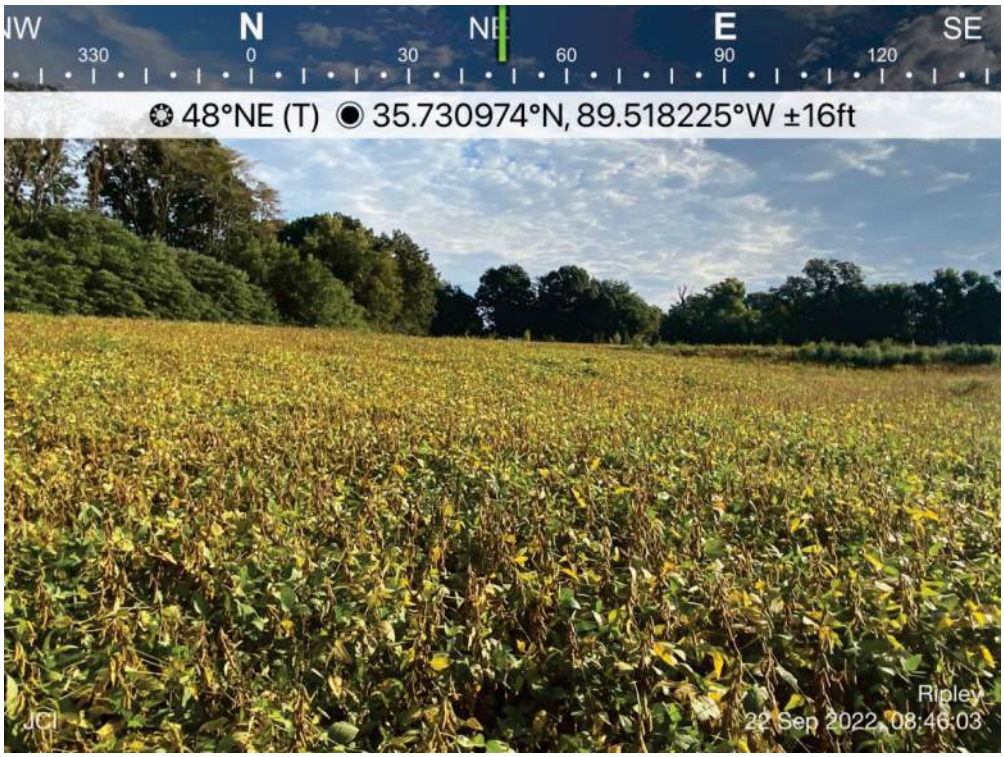

Photo 22. W011-UPL, PEM, facing northeast.

Photo 23. W012-W, PEM, facing northeast.

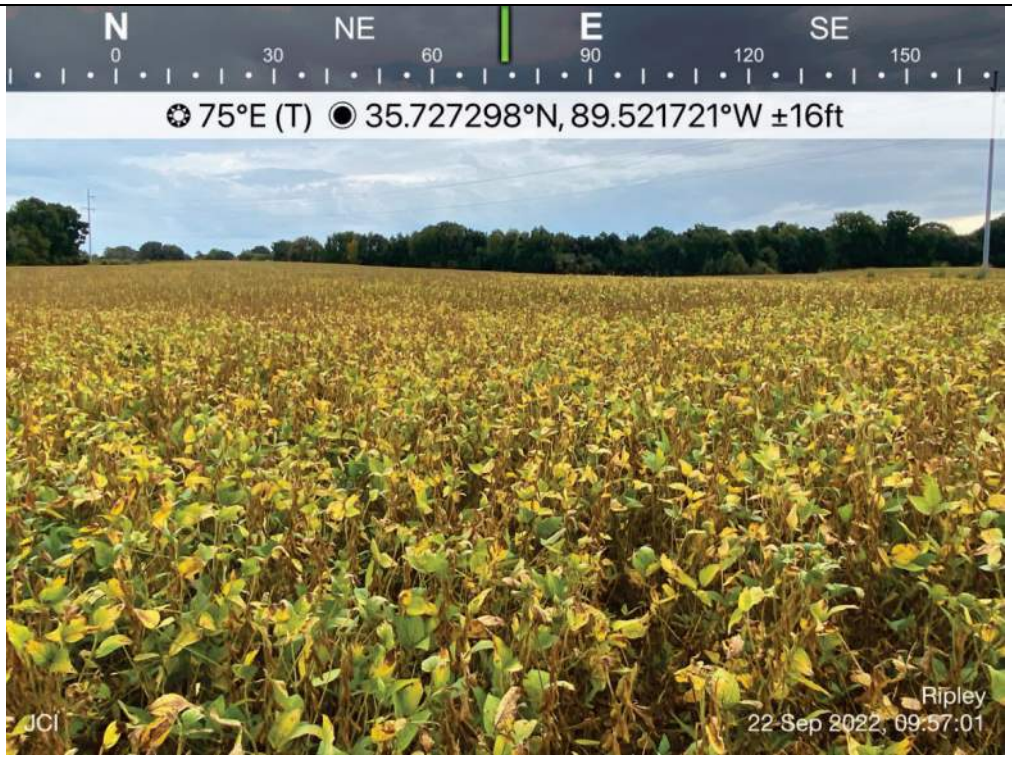

Photo 24. W012-UPL, PEM, facing northeast.

Photo 25- P001, facing northeast

Photo 26- S001, facing east

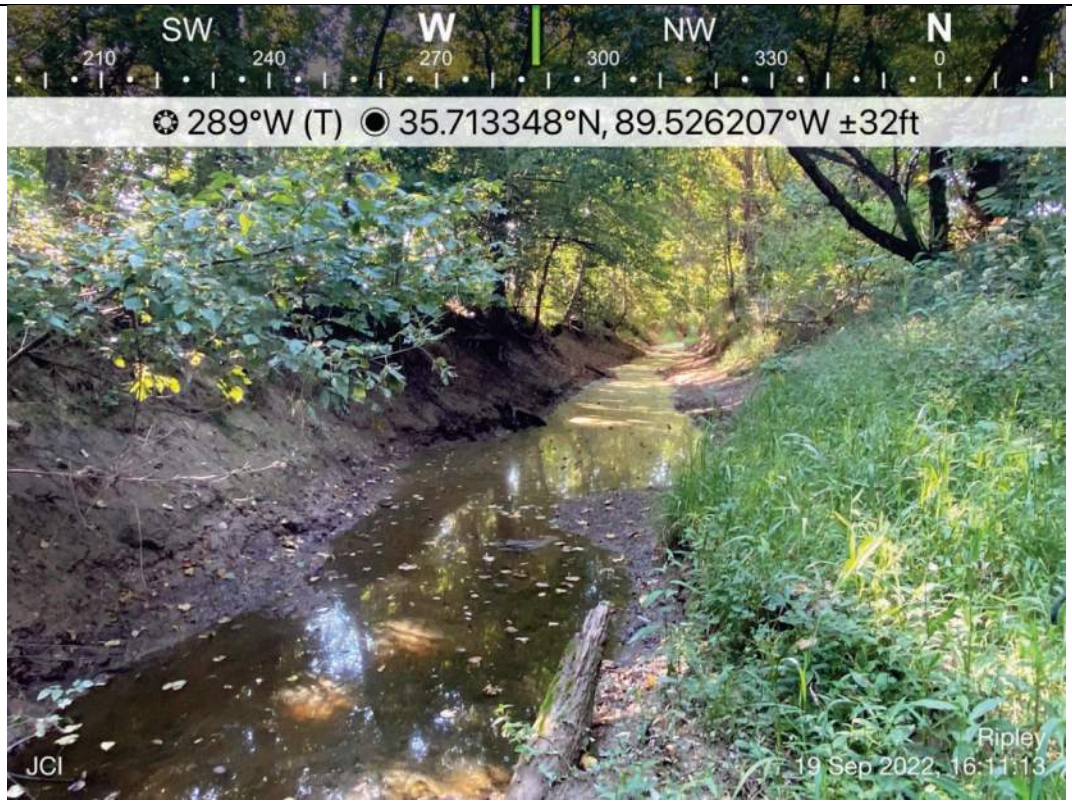

Photo 27- S001, facing west

Photo 28- S002, facing northeast

Photo 29- S002, facing southwest

Photo 30- S003, facing northeast

Photo 31- S003, facing southwest

Photo 32- S004, facing west

Photo 33- S004, facing east

Photo 34- S005, facing east

Photo 35- S005, facing west

Photo 36- S006, facing southeast, culvert off property

Photo 37- S006, facing southwest

Photo 38- S007, facing northeast, downstream

Photo 39- S007, facing west, upstream

Photo 40- S008, facing upstream

Photo 41- S008, facing downstream

Photo 42- S009, facing northeast, upstream

Photo 43- S009, facing southwest, downstream

Photo 44- S010, pipe leading from Pond 1 to stream, upstream

Photo 45- S010, facing southwest, downstream

Photo 46- S011, facing southeast, upstream

Photo 47- S011, facing northwest, downstream

Photo 48- S012, facing southeast, downstream

Photo 49- S012, facing northwest, upstream

Photo 50- S013, facing north, upstream

Photo 51- S013, facing west, downstream

Photo 52- S014, facing west, downstream

Photo 53- S014, facing east, upstream

Photo 54- S015, facing north, upstream

Photo 55- S015, facing southwest, downstream

Photo 56- S016, facing east, upstream

Photo 57- S016, facing west, downstream

Photo 58- S017, facing south, upstream

Photo 59- S017, facing east, downstream

Photo 60- S018, facing north, upstream

Photo 61- S018, facing southeast, downstream

Photo 62- E001, facing east, upstream

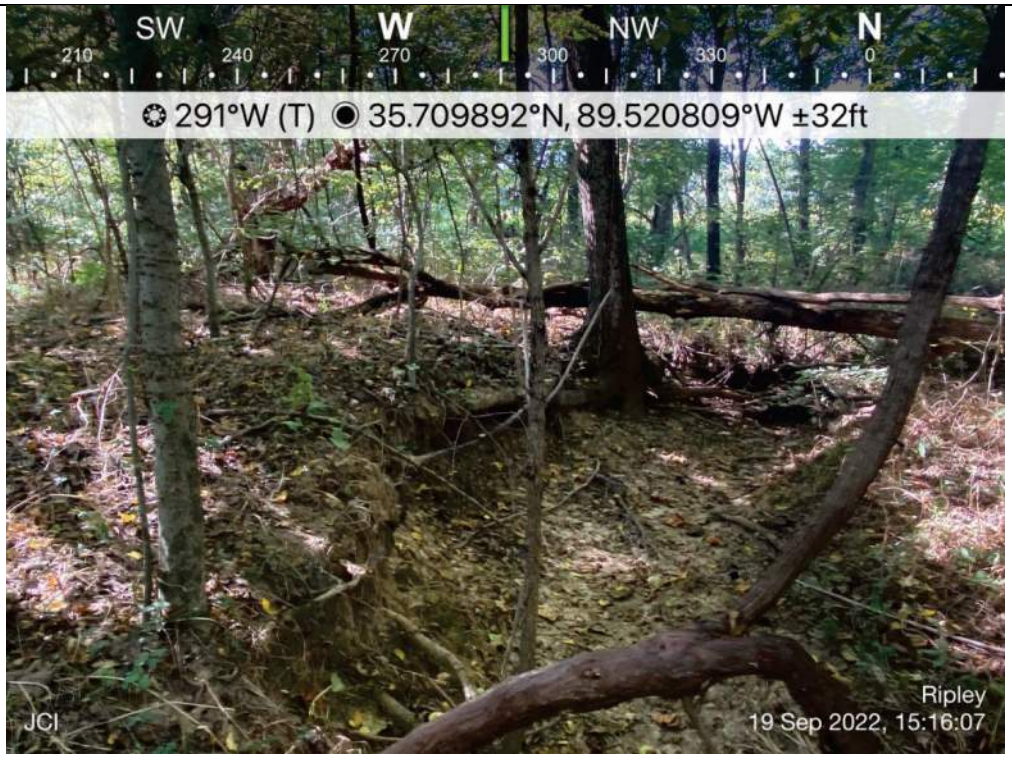

Photo 63- E001, facing west, downstream

Photo 64- E002, facing southwest, downstream

Photo 65- E002, facing north, upstream

Photo 66- E003, facing northwest, downstream

Photo 67- E004, facing north, upstream

Photo 68- E004, facing southwest, downstream

Photo 69- E005, facing north, upstream

Photo 70- E005, facing southeast, downstream

Photo 71- E006, facing north, upstream

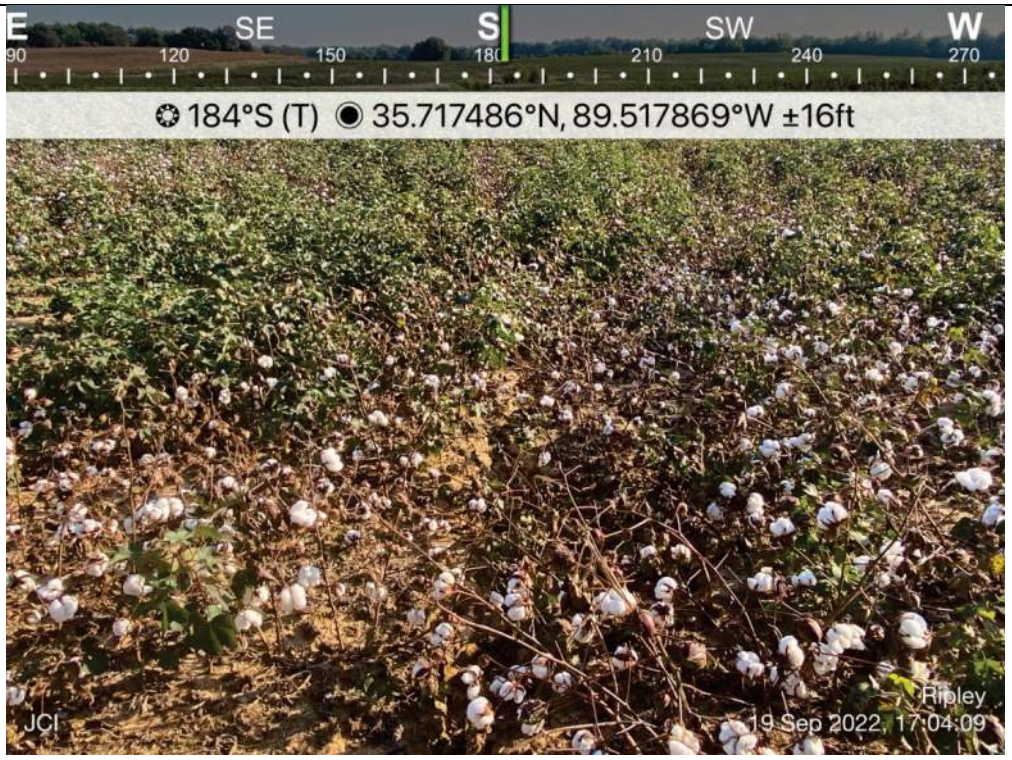

Photo 72- E006, facing south, downstream

Photo 73- E007, facing south, upstream

Photo 74- E007, facing west, downstream

Photo 75- E008, facing northeast, upstream

Photo 76- E008, facing west, downstream

Photo 77- E009, facing north, upstream

Photo 78- E009, facing east, downstream

Photo 79- E010, facing west, downstream

Photo 80- E011, facing northeast, downstream

Photo 81- E011, facing south, upstream

Photo 82- E012, facing southwest, upstream

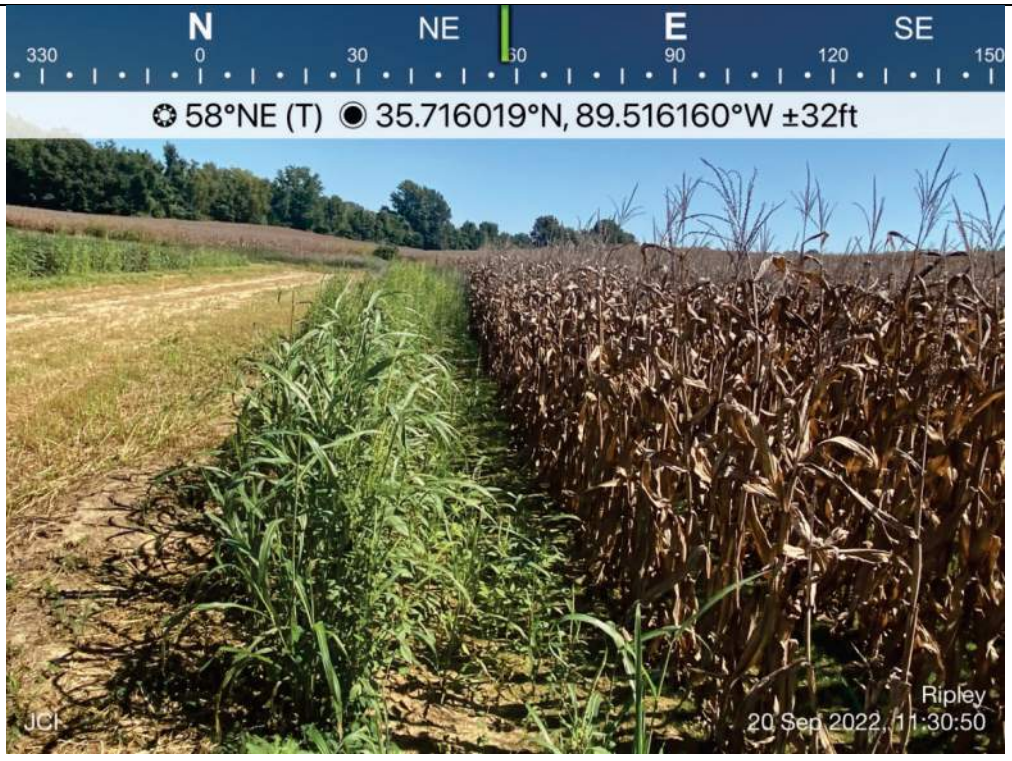

Photo 83- E012, facing northeast, downstream

Photo 84- E013, facing east, upstream

Photo 85- E013, facing west, downstream

Photo 86- E014, facing northeast, upstream

Photo 87- E014, facing west, downstream

Photo 88- E015, facing northeast, upstream

Photo 89- E015, facing west, downstream

Photo 90- E016, facing east, upstream

Photo 91- E016, facing south, downstream

Photo 92- E017, facing northwest, upstream

Photo 93- E017, facing southeast, downstream

Photo 94- E018, facing north, upstream

Photo 95- E018, facing south, downstream

Photo 96- E019, facing north, upstream

Photo 97- E019, facing southeast, downstream

Photo 98- E020, facing northwest, upstream

Photo 99- E020, facing south, downstream

Photo 100- E021, facing east, upstream

Photo 101- E021, facing west, downstream

Photo 102- E022, facing south, upstream

Photo 103- E022, facing north, downstream

Photo 104- E023, facing southeast, upstream

Photo 105- E023, facing northwest, downstream

Photo 106- E024, facing northeast, upstream

Photo 107- E024, facing southwest, downstream

Photo 108- E025, facing northeast, upstream

Photo 109- E025, facing southwest, downstream

Photo 110- E026, facing south, upstream

Photo 111- E026, facing north, downstream

Photo 112- E027, facing southeast, upstream

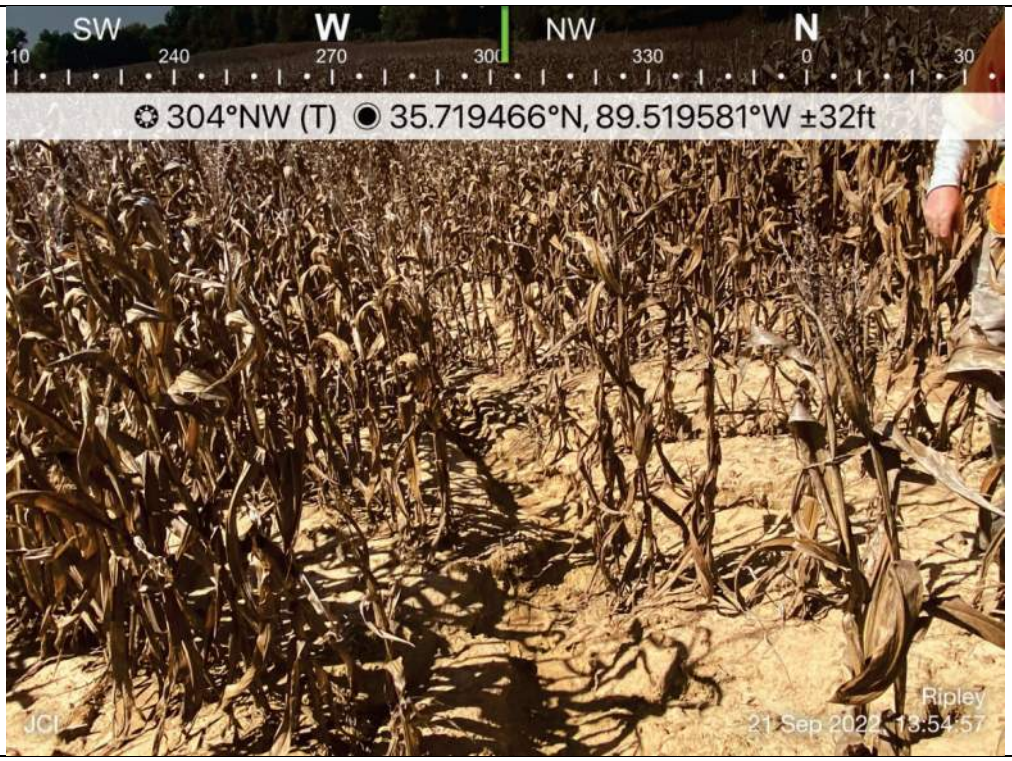

Photo 113- E027, facing northwest, downstream

Photo 114- E028, facing northwest, upstream

Photo 115- E028, facing southeast, downstream

Photo 116- E029, facing northwest, upstream

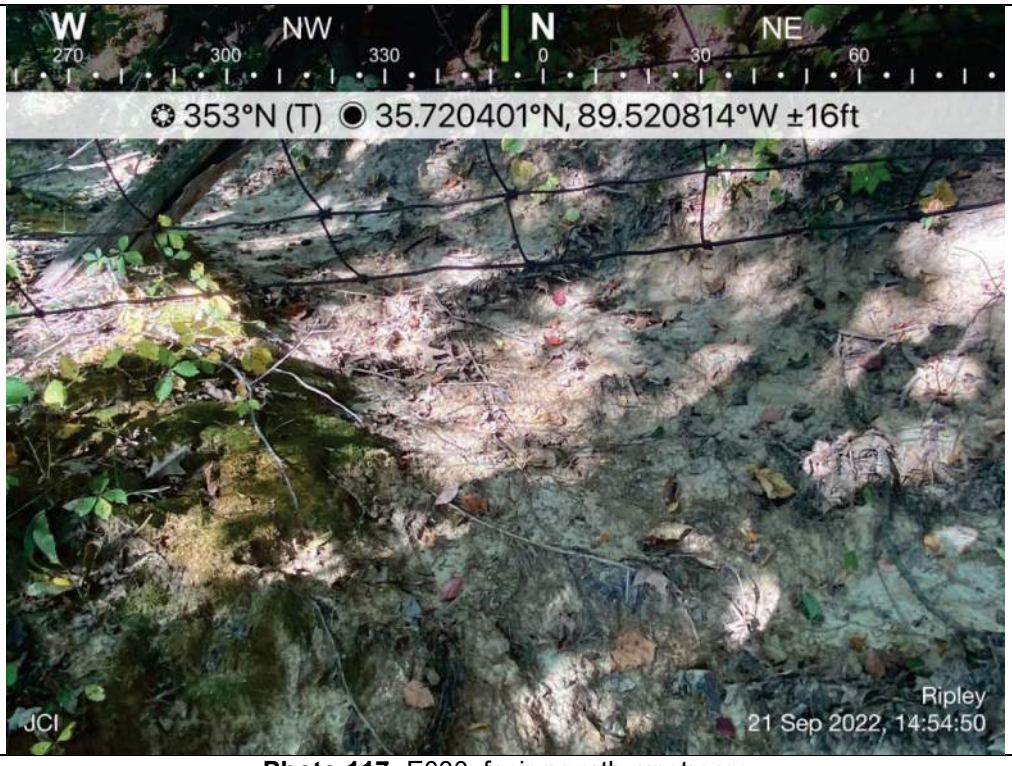

Photo 117- E030, facing north, upstream

Photo 118- E030, facing south, downstream

Photo 119- E031, facing west, downstream

Photo 120- E032, facing southeast, upstream

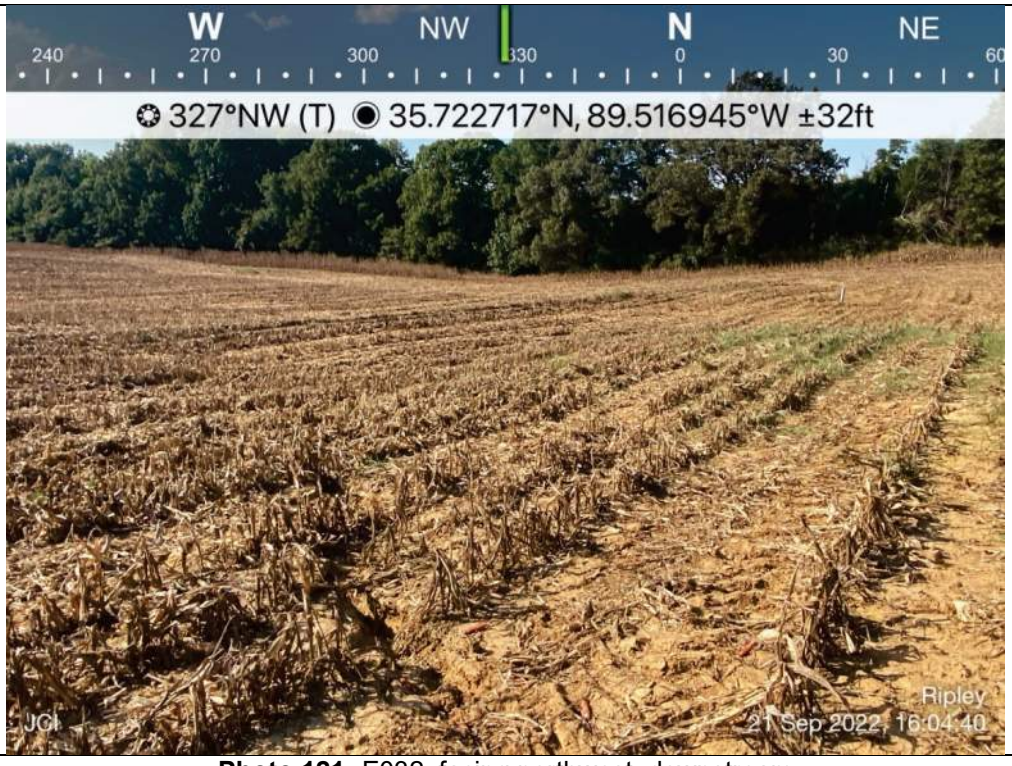

Photo 121- E032, facing northwest, downstream

Photo 122- E033, facing southwest, upstream

Photo 123- E033, facing north, downstream

Photo 124- E034, facing southeast, upstream

Photo 125- E034, facing northwest, downstream

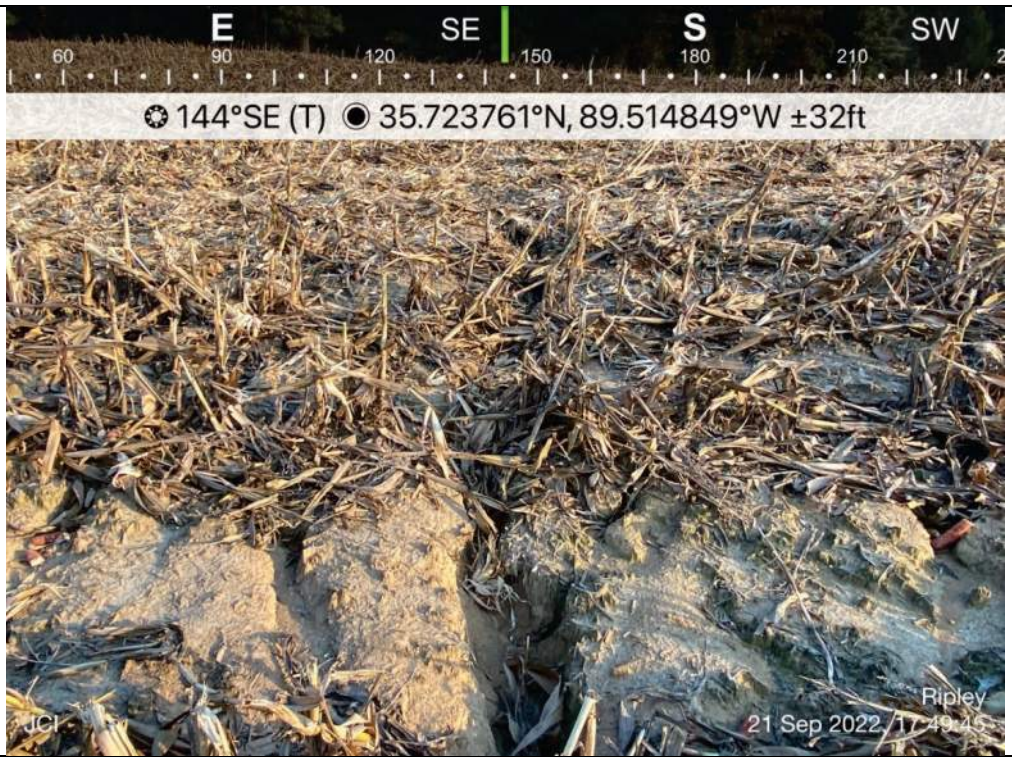

Photo 126- E035, facing southeast, upstream

Photo 127- E035, facing northwest, downstream

Photo 128- E036, facing southeast, upstream

Photo 129- E036, facing north, downstream

Photo 130- E037, facing northeast, upstream

Photo 131- E037, facing south, downstream

Photo 132- E038, facing southeast, upstream

Photo 133- E038, facing northwest, downstream

Photo 134- E039, facing east, upstream

Photo 135- E039, facing southwest, downstream

Photo 136- E040, facing northeast, upstream

Photo 137- E041, facing northeast, upstream

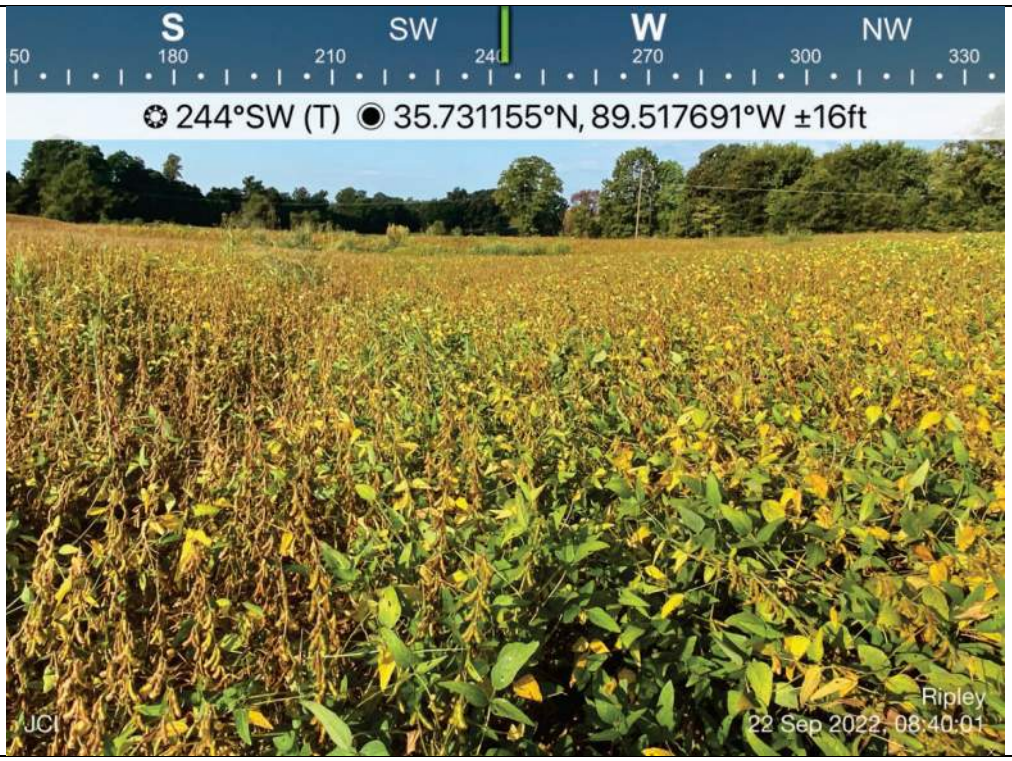

Photo 138- E041, facing southwest, downstream

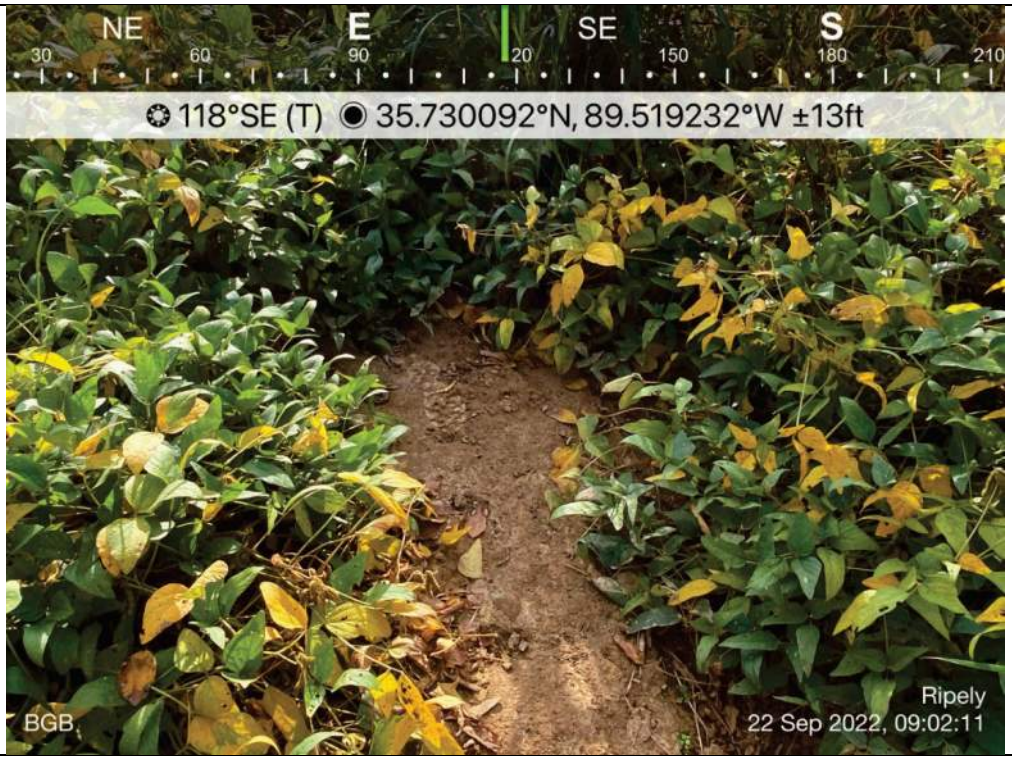

Photo 139- E042, facing southeast, upstream

Photo 140- E042, facing west, downstream

Photo 141- E043, facing south, upstream

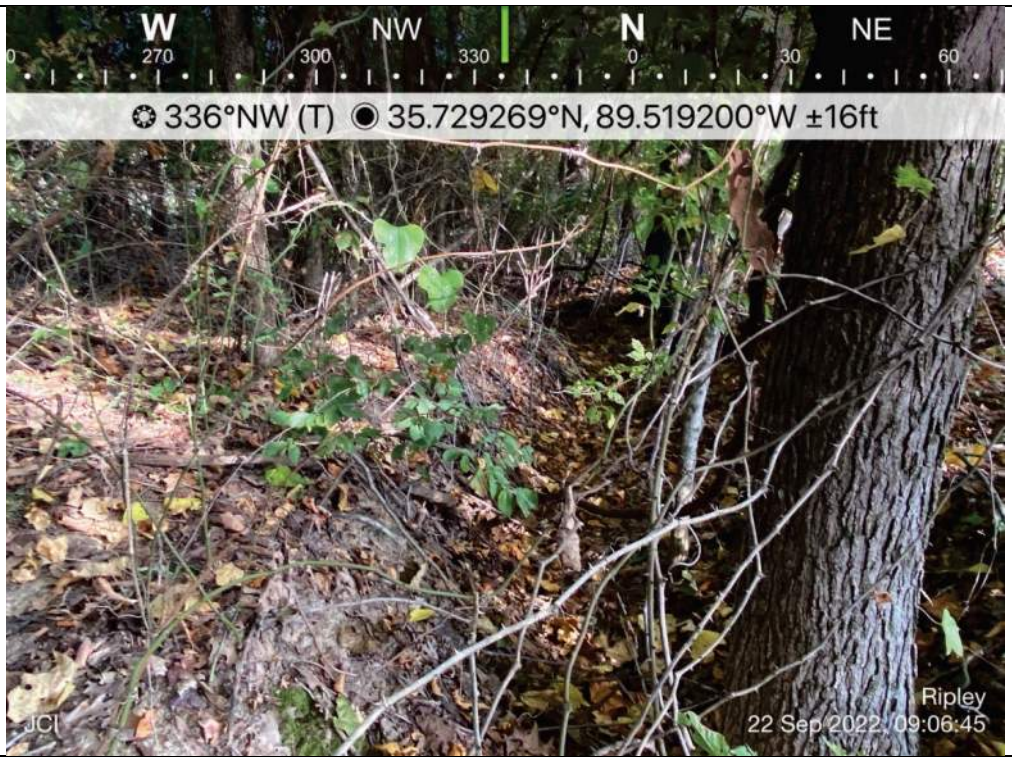

Photo 142- E043, facing northwest, downstream

Photo 143- E044, facing southwest, upstream

Photo 144- E044, facing northeast, downstream

Photo 145- E045, facing west, upstream

Photo 146- E045, facing east, downstream

Photo 147- E046, facing north, upstream

Photo 148- E046, facing southwest, downstream

Photo 149- E047, facing northwest, upstream

Photo 150- E047, facing southeast, downstream

Photo 151- E048, facing south, upstream

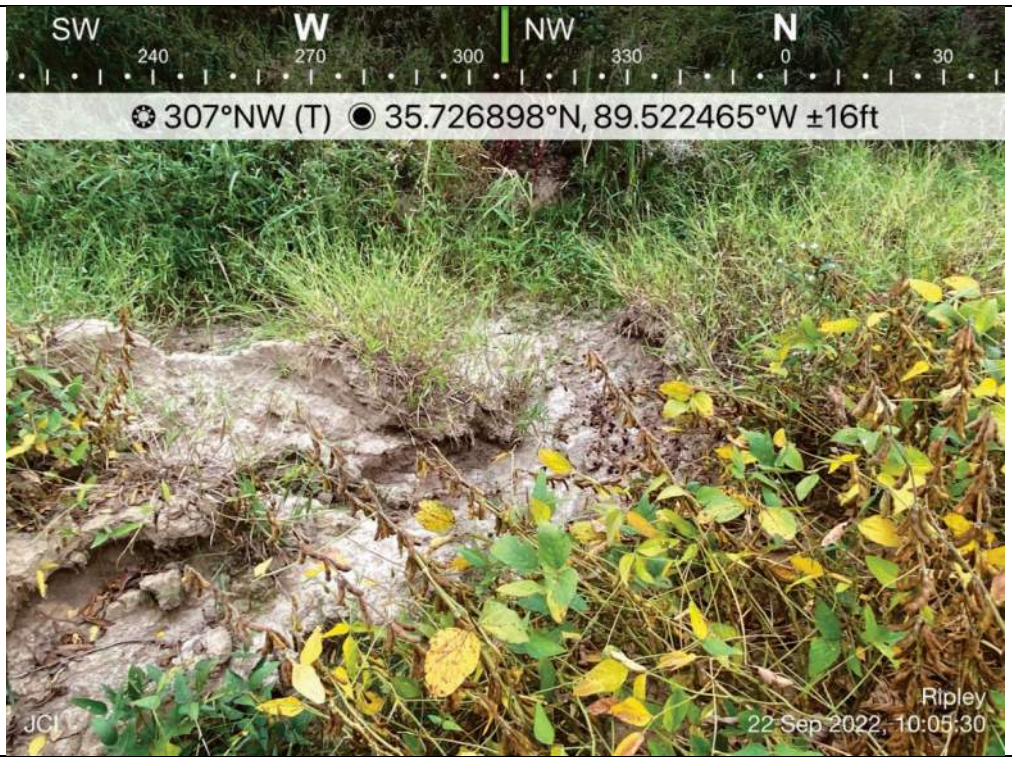

Photo 152- E048, facing northwest, downstream

Photo 153- E049, facing southeast, upstream

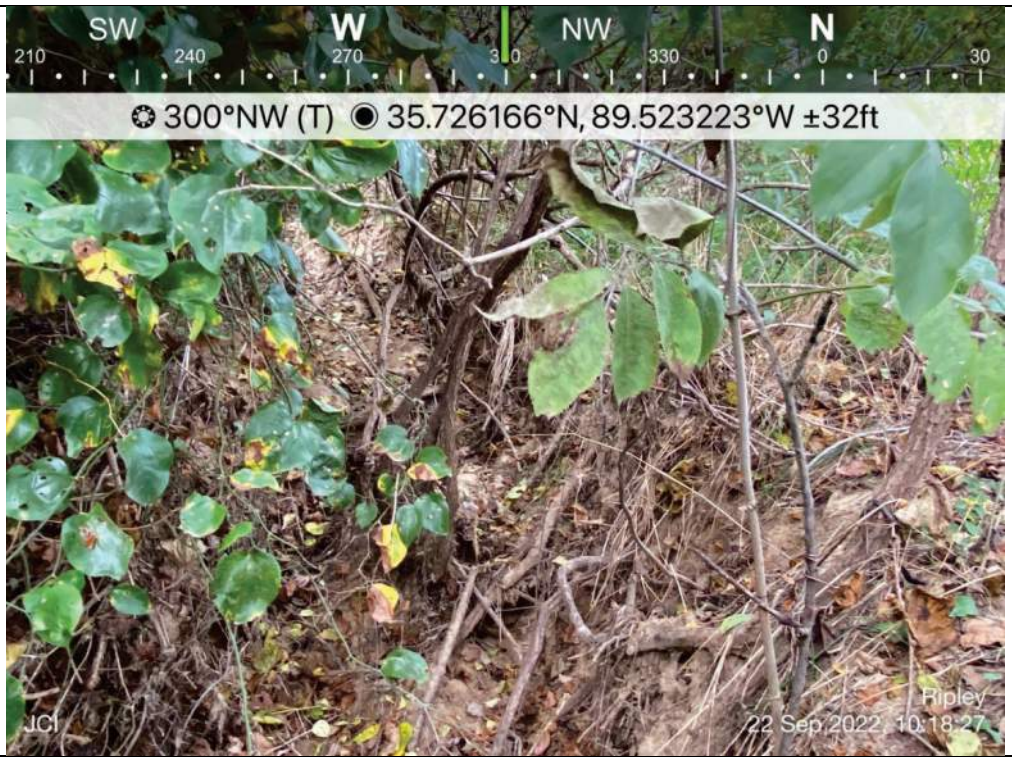

Photo 154- E049, facing northwest, downstream

Photo 155- E050, facing west, upstream

Photo 156- E050, facing east, downstream

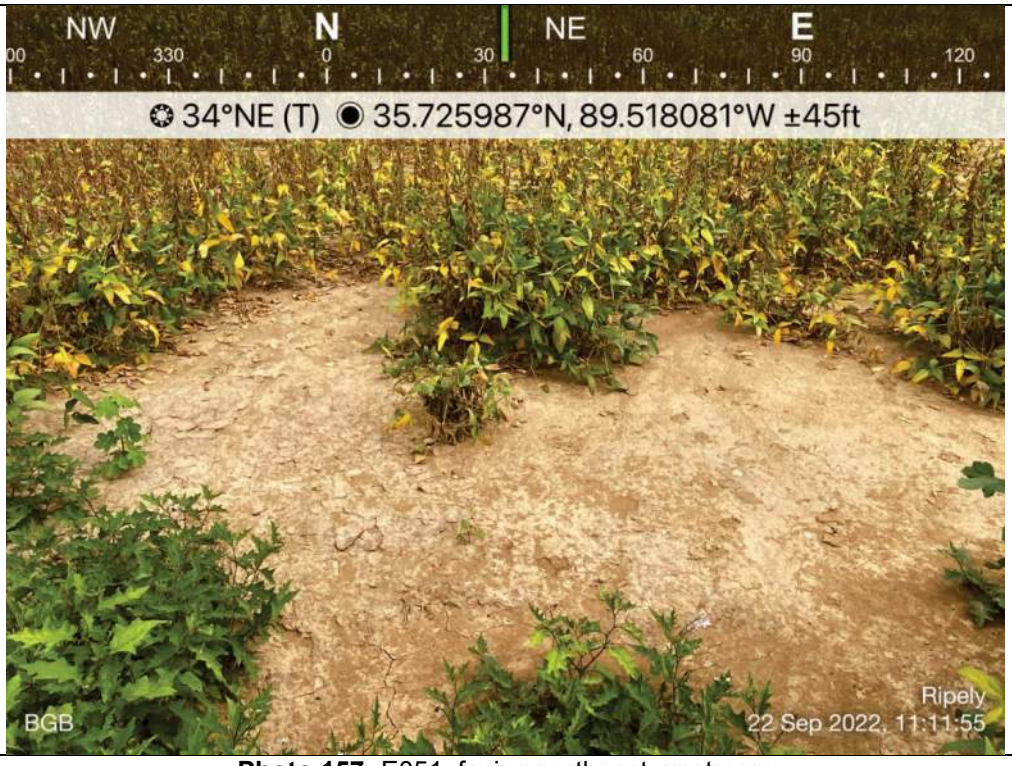

Photo 157- E051, facing northeast, upstream

Photo 158- E051, facing south, downstream

Photo 159- E052, facing northeast, upstream

Photo 160- E052, facing west, downstream

Photo 161- E053, facing north, upstream

Photo 162- E053, facing south, downstream

Photo 163- E054, facing north, upstream

Photo 164- E054, facing southwest, downstream

Photo 165- E055, facing northwest, upstream

Photo 166- E055, facing southeast, downstream

Photo 167- E056, facing north, upstream

Photo 168- E056, facing south, downstream

Photo 169- E057, facing north, upstream

Photo 170- E057, facing south, downstream

Photo 171- E058, facing north, upstream

Photo 172- E058, facing southwest, downstream

Photo 173- E059, facing southeast, upstream

Photo 174- E059, facing west, downstream

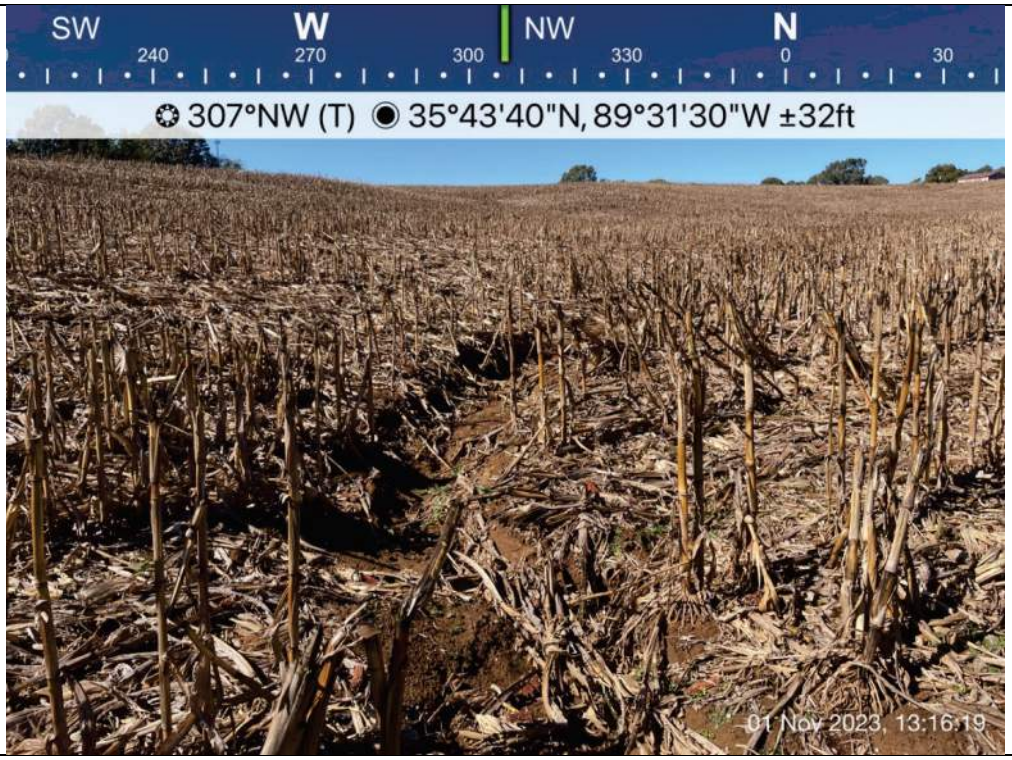

Photo 175- E060, facing northwest, upstream

Photo 176- E060, facing southeast, downstream

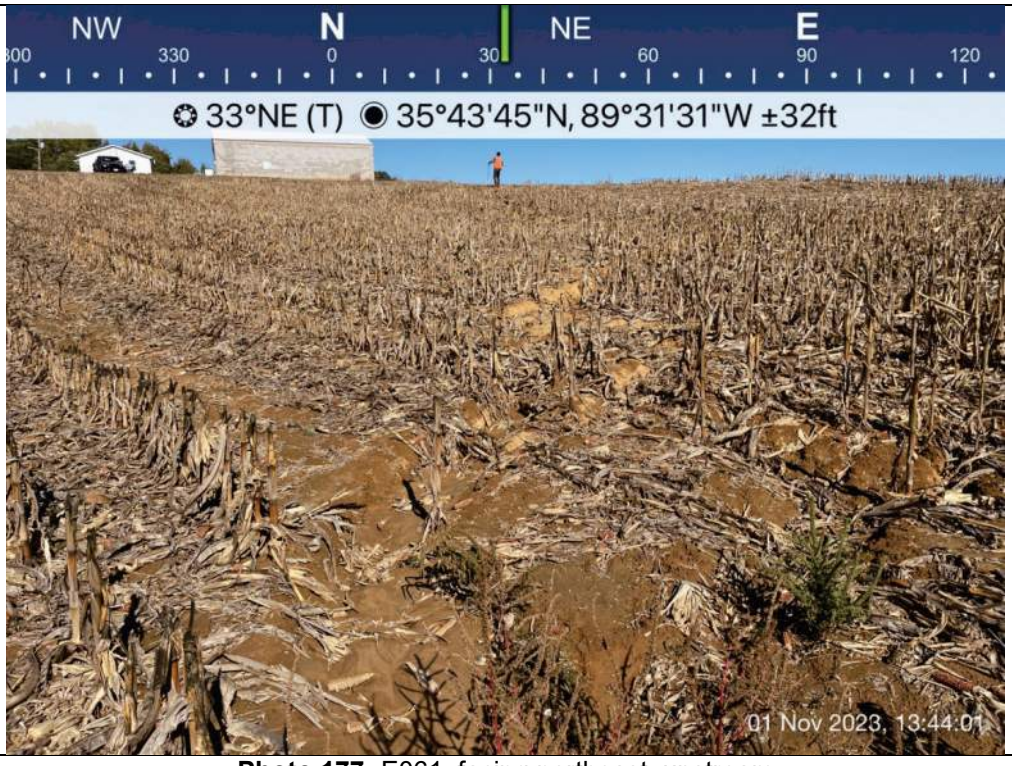

Photo 177- E061, facing northeast, upstream

Photo 178- E061, facing southwest, downstream

Photo 179- E062, facing west, upstream

Photo 180- E062, facing east, downstream

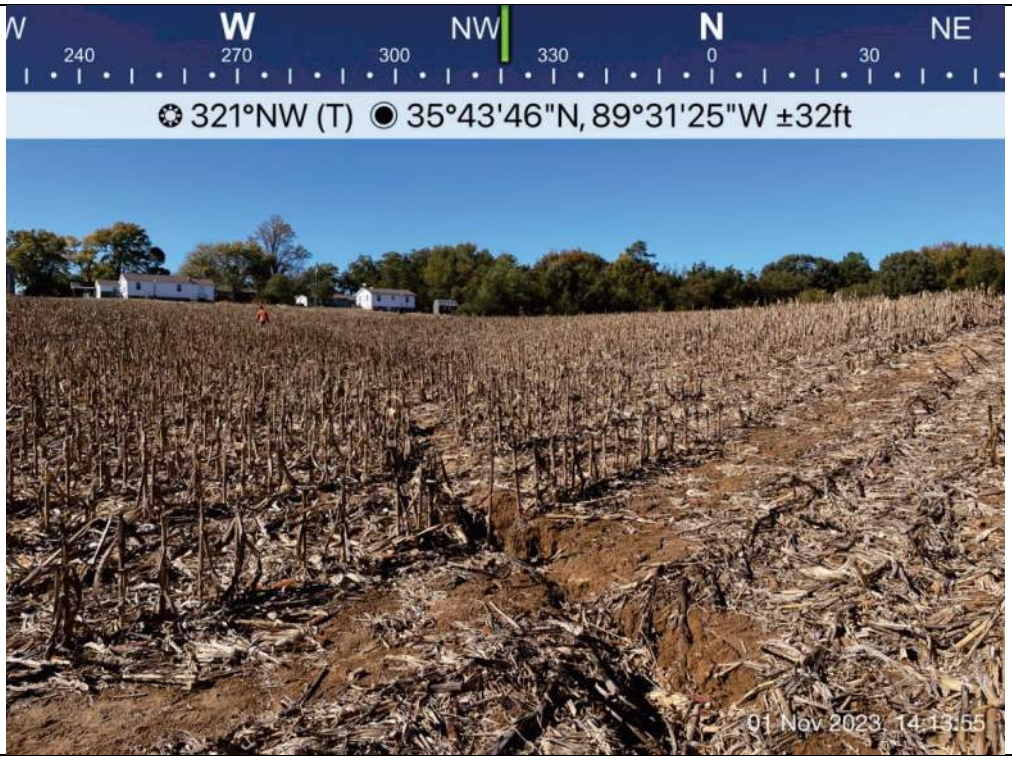

Photo 181- E063, facing northwest, upstream

Photo 182- E063, facing east, downstream

Photo 183- E064, facing north, upstream

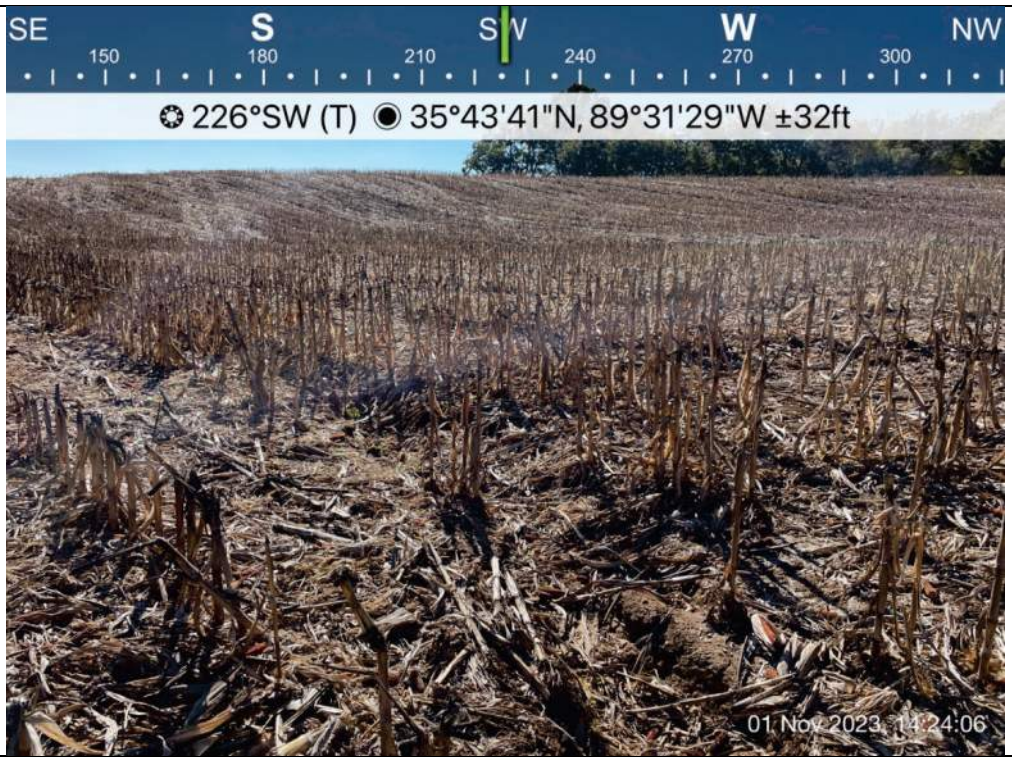

Photo 184- E064, facing southwest, downstream

Photo 185- E065, facing south, upstream

Photo 186- E065, facing west, downstream

E

Appendix E – USDA NRCS Soil Report

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United States Department of Agriculture

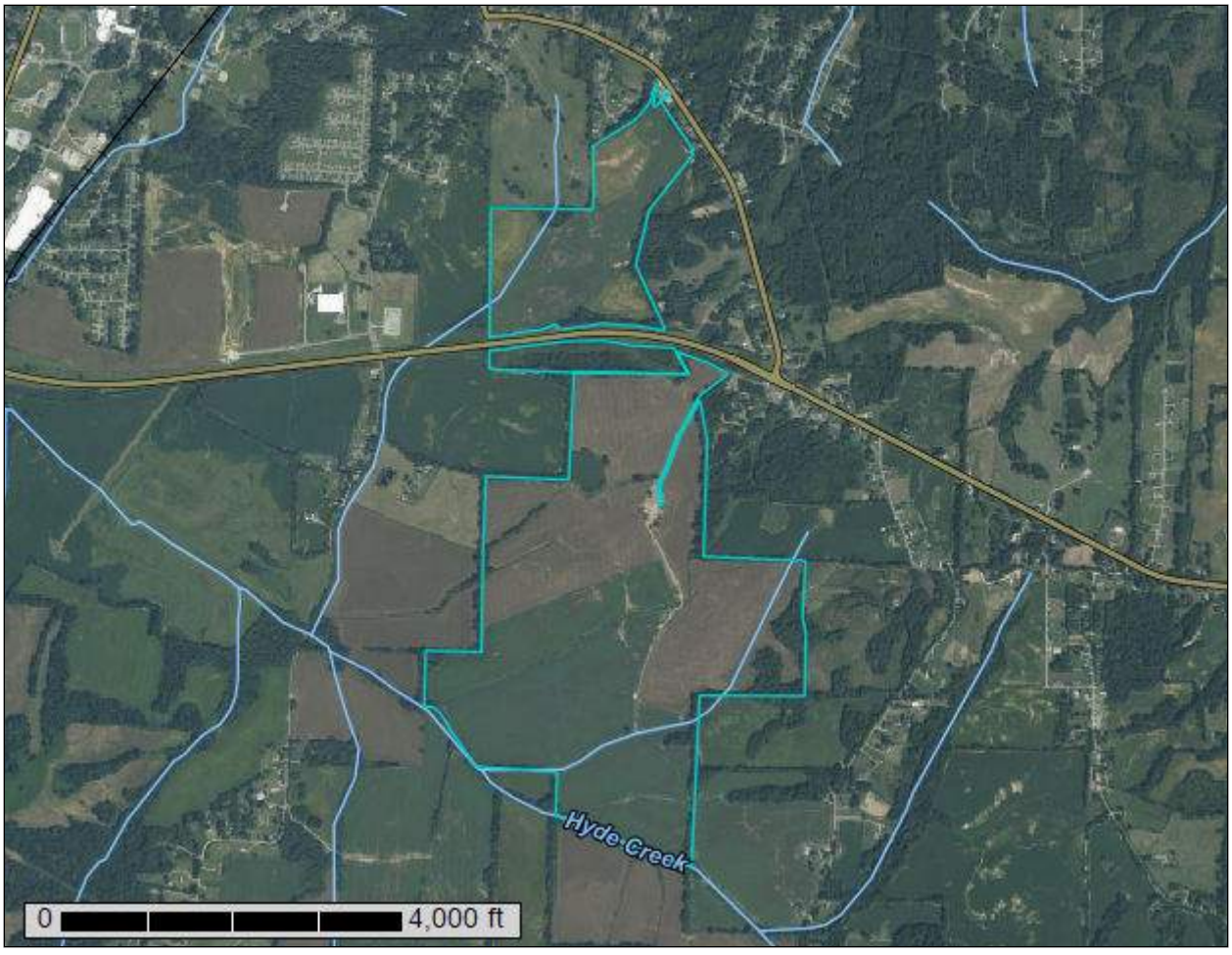
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lauderdale County, Tennessee

SR Ripley II



October 14, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

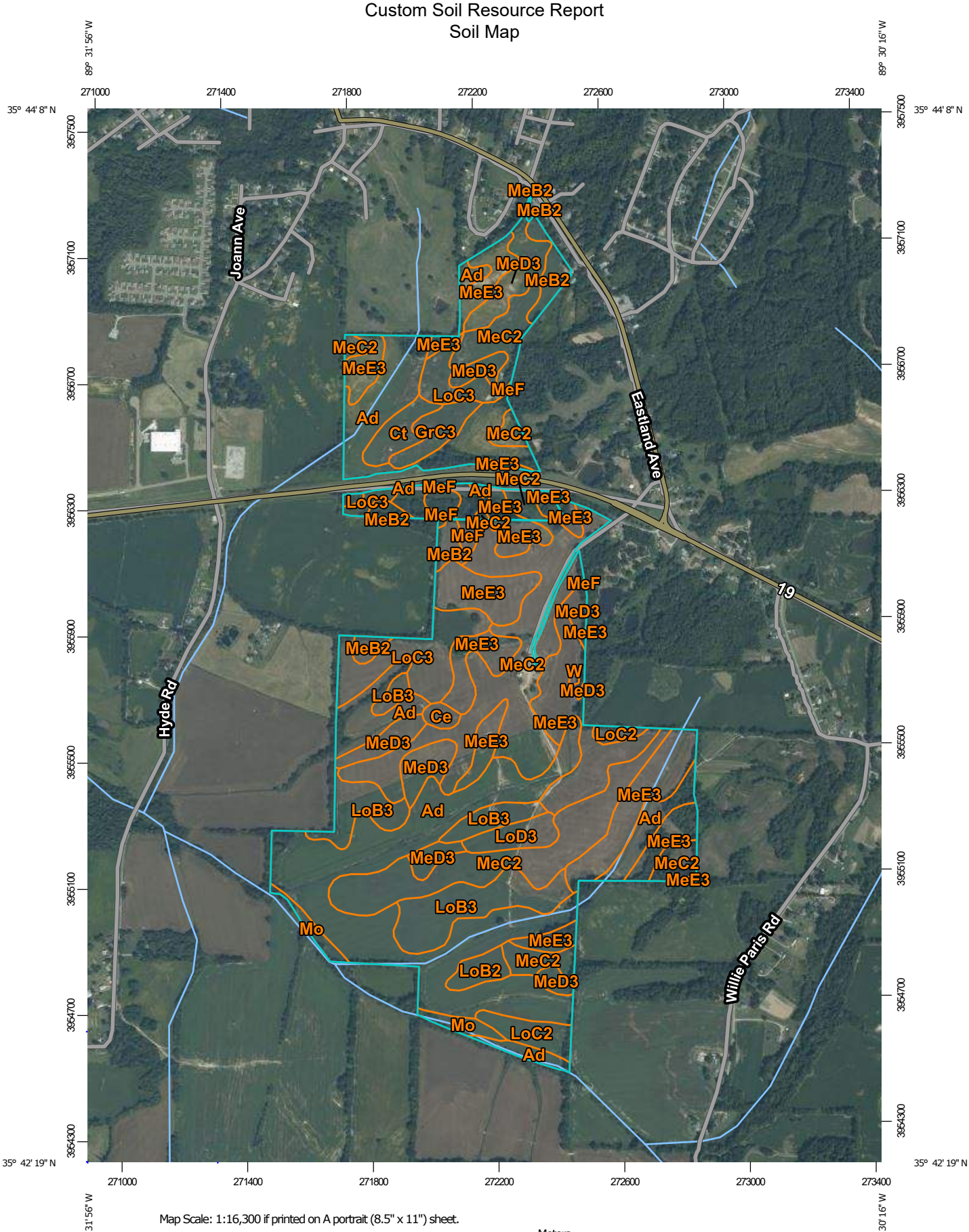
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:16,300 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lauderdale County, Tennessee
Survey Area Data: Version 23, Sep 15, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 9, 2019—Sep 15, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Adler silt loam, 0 to 2 percent slopes, occasionally flooded	115.5	26.6%
Ce	Center silt loam, 0 to 3 percent slopes	2.3	0.5%
Ct	Convent silt loam, occasionally flooded	5.6	1.3%
GrC3	Grenada silt loam, 5 to 8 percent slopes, severely eroded	6.1	1.4%
LoB2	Loring silt loam, 2 to 5 percent slopes, eroded	4.0	0.9%
LoB3	Loring silt loam, 2 to 5 percent slopes, severely eroded	31.8	7.3%
LoC2	Loring silt loam, 5 to 8 percent slopes, eroded	7.6	1.7%
LoC3	Loring silt loam, 5 to 8 percent slopes, severely eroded	24.6	5.7%
LoD3	Loring silt loam, 8 to 12 percent slopes, severely eroded	5.7	1.3%
MeB2	Memphis silt loam, 2 to 5 percent slopes, moderately eroded, northern phase	12.1	2.8%
MeC2	Memphis silt loam, 5 to 8 percent slopes, moderately eroded, northern phase	97.4	22.4%
MeD3	Memphis silt loam, 8 to 12 percent slopes, severely eroded, northern phase	27.3	6.3%
MeE3	Memphis silt loam, 12 to 20 percent slopes, severely eroded, northern phase	83.0	19.1%
MeF	Memphis silt loam, 20 to 40 percent slopes, northern phase	6.4	1.5%
Mo	Morganfield silt loam, occasionally flooded	4.9	1.1%
W	Water	0.2	0.1%
Totals for Area of Interest		**434.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lauderdale County, Tennessee

Ad—Adler silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2wn57
Elevation: 200 to 500 feet
Mean annual precipitation: 50 to 53 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 175 to 214 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Adler, occasionally flooded, and similar soils: 89 percent
Minor components: 11 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adler, Occasionally Flooded

Setting

Landform: Natural levees, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Typical profile

Ap - 0 to 5 inches: silt loam
Bw - 5 to 23 inches: silt loam
Cg - 23 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F134XY014AL - Northern Non-Acid Floodplain - PROVISIONAL
Hydric soil rating: No

Minor Components

Morganfield, occasionally flooded

Percent of map unit: 7 percent

Landform: Natural levees, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Ecological site: F134XY014AL - Northern Non-Acid Floodplain - PROVISIONAL
Hydric soil rating: No

Convent, occasionally flooded

Percent of map unit: 4 percent
Landform: — error in exists on —
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F134XY015AL - Northern Non-Acid Moderately Wet Floodplain - PROVISIONAL
Hydric soil rating: No

Ce—Center silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wn5h
Elevation: 230 to 460 feet
Mean annual precipitation: 50 to 53 inches
Mean annual air temperature: 46 to 70 degrees F
Frost-free period: 192 to 228 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Center and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Center

Setting

Landform: Flats, stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 9 inches: silt loam
Bt - 9 to 35 inches: silty clay loam
C - 35 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Routon

Percent of map unit: 9 percent
Landform: Stream terraces, depressions
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ct—Convent silt loam, occasionally flooded

Map Unit Setting

National map unit symbol: m159
Elevation: 20 to 150 feet
Mean annual precipitation: 39 to 59 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 214 to 228 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Convent and similar soils: 84 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Convent

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Silty alluvium

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 62 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 17 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F134XY015AL - Northern Non-Acid Moderately Wet Floodplain - PROVISIONAL
Hydric soil rating: No

Minor Components

Minor componenets

Percent of map unit: 8 percent
Hydric soil rating: Unranked

Rosebloom

Percent of map unit: 8 percent
Landform: Flood plains
Ecological site: F134XY020AL - Northern Wet Alluvial Flat - PROVISIONAL
Hydric soil rating: Yes

GrC3—Grenada silt loam, 5 to 8 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2v7sc
Elevation: 260 to 480 feet
Mean annual precipitation: 45 to 61 inches
Mean annual air temperature: 50 to 70 degrees F
Frost-free period: 206 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Grenada and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grenada

Setting

Landform: Loess hills
Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
Bw - 6 to 14 inches: silt loam
E - 14 to 18 inches: silt loam
Btx - 18 to 79 inches: silt loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 10 to 20 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 8 to 17 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

LoB2—Loring silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v7sm
Elevation: 260 to 410 feet
Mean annual precipitation: 35 to 63 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 189 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Loring and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Loring

Setting

Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
Bt - 6 to 24 inches: silt loam
Btx - 24 to 48 inches: silt loam
C - 48 to 80 inches: silt loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 24 to 30 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Hydric soil rating: No

LoB3—Loring silt loam, 2 to 5 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2wn67
Elevation: 280 to 460 feet
Mean annual precipitation: 50 to 55 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 192 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

Loring and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Loring

Setting

Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
Bt - 6 to 24 inches: silt loam
Btx - 24 to 48 inches: silt loam
C - 48 to 80 inches: silt loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 10 to 35 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 10 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

LoC2—Loring silt loam, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: m15s
Elevation: 250 to 410 feet
Mean annual precipitation: 39 to 59 inches
Mean annual air temperature: 59 to 61 degrees F
Frost-free period: 214 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

Loring and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Loring

Setting

Landform: Loess hills
Landform position (three-dimensional): Side slope
Parent material: Loess

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 24 inches: silt loam
H3 - 24 to 62 inches: silt loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

LoC3—Loring silt loam, 5 to 8 percent slopes, severely eroded

Map Unit Setting
National map unit symbol: 2v7sk
Elevation: 280 to 490 feet
Mean annual precipitation: 35 to 63 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 189 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Loring and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Loring

Setting
Landform: Loess hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loess

Typical profile
Ap - 0 to 5 inches: silt loam
Bt - 5 to 20 inches: silt loam
Btx - 20 to 65 inches: silt loam

Properties and qualities
Slope: 5 to 8 percent
Depth to restrictive feature: 14 to 30 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 11 to 14 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Hydric soil rating: No

LoD3—Loring silt loam, 8 to 12 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2v7sl
Elevation: 280 to 490 feet
Mean annual precipitation: 35 to 63 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 189 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Loring and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Loring

Setting

Landform: Loess hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 4 inches: silt loam
Bt - 4 to 20 inches: silt loam
Btx - 20 to 60 inches: silt loam
C - 60 to 79 inches: silt loam

Properties and qualities

Slope: 8 to 12 percent
Depth to restrictive feature: 14 to 30 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 12 to 33 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

MeB2—Memphis silt loam, 2 to 5 percent slopes, moderately eroded, northern phase

Map Unit Setting

National map unit symbol: 2t23z
Elevation: 260 to 540 feet
Mean annual precipitation: 50 to 54 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 182 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Memphis, eroded, north, and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Memphis, Eroded, North

Setting

Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty noncalcareous loess

Typical profile

Ap - 0 to 6 inches: silt loam
Bt1 - 6 to 18 inches: silty clay loam
Bt2 - 18 to 74 inches: silt loam
C - 74 to 80 inches: silt loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F134XY002AL - Northern Deep Loess Summit - PROVISIONAL
Hydric soil rating: No

Minor Components

Lexington

Percent of map unit: 6 percent
Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F134XY003AL - Northern Loess Interfluve - PROVISIONAL
Hydric soil rating: No

Loring

Percent of map unit: 4 percent
Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F134XY012AL - Northern Loess Fragipan Upland - PROVISIONAL
Hydric soil rating: No

Grenada

Percent of map unit: 2 percent
Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F134XY012AL - Northern Loess Fragipan Upland - PROVISIONAL
Hydric soil rating: No

MeC2—Memphis silt loam, 5 to 8 percent slopes, moderately eroded, northern phase

Map Unit Setting

National map unit symbol: 2y70s
Elevation: 300 to 540 feet
Mean annual precipitation: 50 to 54 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 182 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Memphis, northern phase, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Memphis, Northern Phase

Setting

Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-silty noncalcareous loess

Typical profile

Ap - 0 to 6 inches: silt loam
Bt1 - 6 to 18 inches: silty clay loam
Bt2 - 18 to 74 inches: silt loam
C - 74 to 80 inches: silt loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F134XY002AL - Northern Deep Loess Summit - PROVISIONAL
Hydric soil rating: No

Minor Components

Loring, northern phase

Percent of map unit: 5 percent
Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F134XY012AL - Northern Loess Fragipan Upland - PROVISIONAL
Hydric soil rating: No

MeD3—Memphis silt loam, 8 to 12 percent slopes, severely eroded, northern phase

Map Unit Setting

National map unit symbol: 2y722
Elevation: 210 to 600 feet
Mean annual precipitation: 50 to 54 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 182 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Memphis, northern phase, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Memphis, Northern Phase

Setting

Landform: Loess hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Fine-silty noncalcareous loess

Typical profile

Ap - 0 to 5 inches: silt loam
Bt - 5 to 38 inches: silt loam
C - 38 to 80 inches: silt loam

Properties and qualities

Slope: 8 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F134XY002AL - Northern Deep Loess Summit - PROVISIONAL
Hydric soil rating: No

Minor Components

Loring

Percent of map unit: 5 percent
Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F134XY012AL - Northern Loess Fragipan Upland - PROVISIONAL
Hydric soil rating: No

MeE3—Memphis silt loam, 12 to 20 percent slopes, severely eroded, northern phase

Map Unit Setting

National map unit symbol: 2y721
Elevation: 210 to 600 feet
Mean annual precipitation: 35 to 63 inches
Mean annual air temperature: 59 to 72 degrees F
Frost-free period: 195 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Memphis, northern phase, and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Memphis, Northern Phase

Setting

Landform: Loess hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Parent material: Fine-silty noncalcareous loess

Typical profile

Ap - 0 to 5 inches: silt loam
Bt - 5 to 38 inches: silt loam
C - 38 to 80 inches: silt loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F134XY001TN - Northern Deep Loess Backslope Mesophytic Forest
Hydric soil rating: No

Minor Components

Loring

Percent of map unit: 5 percent
Landform: Loess hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Lexington

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

MeF—Memphis silt loam, 20 to 40 percent slopes, northern phase

Map Unit Setting

National map unit symbol: 2t23x
Elevation: 200 to 540 feet
Mean annual precipitation: 50 to 54 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 182 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Memphis, northern phase, and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Memphis, Northern Phase

Setting

Landform: Loess hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty noncalcareous loess

Typical profile

A - 0 to 7 inches: silt loam
Bt1 - 7 to 18 inches: silty clay loam
Bt2 - 18 to 74 inches: silt loam
C - 74 to 108 inches: silt loam

Properties and qualities

Slope: 20 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F134XY001TN - Northern Deep Loess Backslope Mesophytic Forest
Hydric soil rating: No

Minor Components

Natchez

Percent of map unit: 9 percent
Landform: Loess bluffs
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Mo—Morganfield silt loam, occasionally flooded

Map Unit Setting

National map unit symbol: m161

Elevation: 230 to 490 feet
Mean annual precipitation: 39 to 59 inches
Mean annual air temperature: 59 to 61 degrees F
Frost-free period: 214 to 228 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Morganfield and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morganfield

Setting
Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Silty alluvium

Typical profile
H1 - 0 to 9 inches: silt loam
H2 - 9 to 60 inches: silt loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 48 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F134XY014AL - Northern Non-Acid Floodplain - PROVISIONAL
Hydric soil rating: No

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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